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How the Laboratory Division of the Depart



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MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES
LABORATORY DIVISION W. F. COGSWELL BUILDING HELENA

October 24, 1972

HOW THE LABORATORY DIVISION OF THE DEPARTMENT OF HEALTH AND
ENVIRONMENTAL SCIENCES MET ITS RESPONSIBILITY TO MONTANANS:

JULY 1, 1971 to JUNE 30, 1972

A. EMISSIONS FROM THE ENVIRONMENTAL CHEMISTRY LABORATORY

Annual Report of the Chemistry Laboratory Bureau

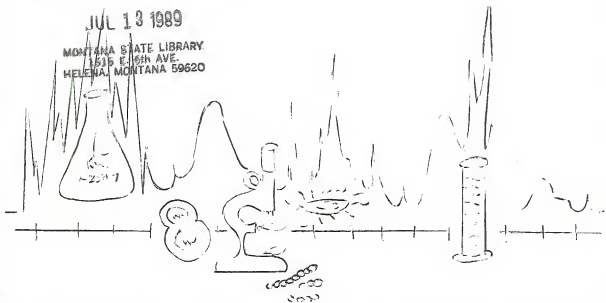
B. BUGS IN THE BIG SKY COUNTRY: FROM AEROMONAS TO XANTHOMONAS

Annual Report of the Microbiology Laboratory Bureau

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INTRODUCTION

This is a detailed account of tests performed in the laboratory and their relationship to programs of the department. Whenever possible an estimate of cost of a service in fiscal year 1972 is given. However, a full year's experience is required before this can be done and I have not had this for the chemistry laboratory bureau (it became part of the division on November 29, 1971). The work-load is measured by the number of tests performed except in the Health Care Facilities Program. Along with testing goes a great deal of consultation but in a reference laboratory this is part of the game and cannot be measured separately.

Our narrative report is the final one and ties together, and fills in the details for, three others: Combined Annual and Quadrennial Questionnaire for the Association of State and Territorial Public Health Laboratory Directors; the State Plan; and the Annual Report to Governor Forrest H. Anderson.

The principal goals in the Laboratory Division are:

1. To function as a reference laboratory for difficult and unusual procedures and for those which would be inordinately expensive if not performed in large volume.
2. To perform direct services required by law or Board regulations.
3. To provide laboratory services for special studies and programs of other divisions and bureaus.
4. To work for improvement in the performance of other laboratories in the state.
5. To improve the quality and relevance of our own services.

The major accomplishments during the year to which the laboratory has made a contribution are:

1. The establishment of an alcohol testing program for implementation of "Implied Consent". Legal references: Section 32-2142.3, R.C.M. 1947; Board of Health and Environmental Sciences Regulation 60-002.
2. The prosecution of a comprehensive program of testing for immunity to rubella (German measles).
3. The establishment, under the auspices of the department, of a family planning program for Montana with clinics in 12 locations. The laboratory performs serological tests for syphilis, cultures for the gonococcus, and tests for susceptibility to German measles on all clients.
4. Implementation of the reorganization act of 1971 (Section 82A-101-2103, R.C.M. 1947). The establishment of a laboratory division in the department has had a very favorable effect on the provision of services to the people of Montana.
5. Screening of adults for heart disease, diabetes, and glaucoma. We performed tests to determine cholesterol levels in the heart screening program.

An important future accomplishment is the securing of laboratory legislation for Montana. Our latest version of a bill for an Act entitled "An Act to Regulate and License Clinical Laboratory Facilities and Personnel" is considered to be a model one. It will probably be introduced in the next session of the legislature.

This report is arranged as follows:

A. Chemistry Laboratory Bureau

Section I	Air Quality Control	12,924 examinations
Section II	Water Quality Control	3,261 examinations
Section III	Highway Alcohol Program	2,133 examinations
Section IV	Consumer Protection	33 examinations
		1,437 determinations of cholesterol

B. Microbiology Laboratory Bureau

Section I	Bacteriology (Determinative, Enteric, Streptococcal)	7,084 examinations
Section II	Virology	16,365 examinations
Section III	Venereal Disease Control	41,058 examinations
Section IV	Special Microbiology (Serology, Mycobacteriology, Mycology, Parasitology)	12,800 examinations
Section V	Maternal and Child Health (PKU)	9,899 examinations
Section VI	Environmental Microbiology	15,347 examinations
Section VII	Diagnostic testing for Indian Health Service, Billings Area Office	7,530 examinations
Section VIII	Hospital and Medical Facilities -	not measured in terms of examinations
Section IX	Financial	\$345,866 spent - this estimate also includes A.

A. Chemistry Laboratory Bureau

Section I	Air Quality Control
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Many of the analyses in this program are not performed in the laboratory but are the results from monitors in the field. Scientists responsible for this phase of the work carry out their activities in the Air Quality Bureau. However, we include a summary of their sampling here on the next page.

Fiscal Year 1972 (July 1, 1971 - June 30, 1972)

Areas and Locations	Number of Active Sampling Stations	Average Number of Samples Collected Per Month	Average Number of Determinations Per Month	Comments
Anaconda Area	27	51	262	Also approx. 180 bubbler samples. Terminated area study 3/72
Butte	5	70	335	Terminated area study 3/72
Billings Area	65	126	126	Also special projects 100 HV Samples 4 Determ. ea & 100 grass samples 1 det. ea.
Eastern Region	46	154	168	Established full area 4/72 Colstrip area estab. 9/71
Garrison Area	14	30	110	Reduced study area, size 4/72
Great Falls Area	26	28	45	
Helena - E. Helena	10	38	48	
Lewistown	1	4	7	
Philipsburg	5	15	24	Initiated study area 1/72
Ramsay	7	29	82	Dropped one full sta. 3/72
Roundup	1	4	7	
W.Yellowstone	2	13	23	
Western Region	33	78	118	

Activity in the Chemistry Laboratory Bureau consisted of performing 12,924 examinations on 6,000 specimens. Tests performed included analyses for lead, particulates, benzene solubles (mainly hydrocarbons), fluorides, sulfur dioxide, oxides of nitrogen, arsenic, cadmium, zinc, copper and mercury.

Section II

Water Quality Control

Work in the laboratory included 3,261 examinations on 2,476 specimens. Analytical procedures included tests for total solids, hardness, iron, zinc, arsenic, lead, copper, selenium, odor, turbidity, pH, calcium, magnesium, sodium, potassium, carbonate, sulfate, chloride, nitrate, fluoride, phosphate, biological oxygen demand, consumed oxygen, phenols, detergents, pesticides and hydrocarbons.

As in the case of Air, there is extensive field work done by personnel not in the division but working in the laboratory. Also, some laboratory field work is done in two branch offices (Billings and Kalispell) of the Division of Environmental Sciences. One project is the Upper Missouri River Sub-basin study. The work is done by Kevin Kirley, Chemist and Keith Kramlick, Laboratory and Field Technician. In the field they determine dissolved oxygen, specific conductivity, pH, and temperature of the air and water. In the laboratory the following determinations are made: biological oxygen demand, total coliforms (membrane filter technique), turbidity, color, total filterable residue, chemical analysis for calcium, magnesium, sodium, calcium carbonate, chloride, sulfate, nitrate, phosphate, fluoride, iron, arsenic, lead, copper and zinc. To 9/12/72, approximately 80 samples have undergone complete analysis.

The minor sub-basin studies involving minor rivers in the Upper Missouri River Basin are done by Bob Braico. Analysis is the same as above on mountain streams except for total coliforms and biological oxygen demand. Drainages from mines are analyzed for arsenic, lead, iron, zinc, and copper. Approximately 50 samples have been analyzed under this program through 9/12/72.

We agree with engineers in the Water Quality Bureau that our chemistry laboratory is inadequate for an extensive water pollution control project to provide a background of data to serve as a basis for impact statements. However, the deficiency is one of quantity rather than quality. This can be corrected by the following capital expenditures which we hope the environmental sciences division can provide for in the various federal grants they receive for control of pollution.

- A. Center Chemical Laboratory bench for room 229 - cost installed about \$6,000.
- B. Industrial model autoanalyzer with six "black boxes" - cost about \$25,000 or can be leased for about \$550 per month.
- C. Atomic Absorption AA-5 with Carbon Rod Atomizer - cost about \$9,500.

We have a very fine analytical instrument, the Beckman GC-4 gas chromatograph, which will be used more frequently this year, especially for pesticide analysis. Another need is for a chemist II with extensive experience in instrumentation. We have two such persons who would be available on short notice.

Section III

Highway Alcohol Program

This program is carried out under contract with the federal Department of Transportation through the Highway Safety Division of the Department of Intergovernmental Relations. The legal authority is contained in Section 32-2142.3, RCM 1947, the "Implied Consent Law" and Board of Health and Environmental Sciences regulation 60.002, Quality Control of Alcohol Analyses. The contract and amendments for 1972 was for expenditures of \$76,835 in the laboratory.

For this the following was accomplished:

1. 15 Alco-Analyzers were purchased and 14 of these were set up for operation in the following police departments: Billings, Bozeman, Butte, Glasgow, Glendive, Great Falls, Helena, Havre, Kalispell, Lewistown, Miles City, Missoula, Shelby, and Wolf Point. One outfit was retained in our laboratory for processing Sobermeters.

2. Over 200 law enforcement officers were given training and were certified as operators or operator-supervisors of Alco-Analyzers.

3. Several training sessions were held at the Police Academy on alcohol analysis in connection with "Implied Consent".

4. Many training sessions on collection of specimens by use of the Sobermeter SM-7 were held.

5. 2500 Sobermeters were placed in law-enforcement vehicles and in police stations.

6. A Varian 2800 gas chromatograph was purchased and set up for reference work. The chemist in the program attended a special training course on this instrument. One of its greatest uses is for determination of carbon monoxide levels in blood and for drug detection. (These are two areas we are adding to our high-way program).

7. Here is a summary of analyses performed (the program didn't get into full-swing until December):

	Number	Number positive (equal to or greater than 0.10%)
Breath samples shipped to our laboratory on Sobermeters	427	402
Breath analyses done by law-enforcement officers on Alco-Analyzers	585	567
Blood shipped to our laboratory	759	560
Urine shipped to our laboratory	362	344
Totals	2133	1873

8. The chemist in charge of this program has been involved in numerous court appearances and is very effective because I don't believe he has "lost a case".

The program to provide laboratory back-up for law-enforcement officers in connection with "Implied Consent" has been a most successful one. Two major factors contributing to this are the quality of personnel assigned to the project and adequate financing to "get it off the ground". Some indication of how the program is being received locally is contained in excerpts from a letter of October 16, from Robert K. Johnson, Chief of Police, Bozeman, to Mike Harrington, chemist in charge of the program.

"From January 1, 1972 to September 30, 1972, we have successfully prosecuted 76 D.W.I.s through our Police Court. The month of September 1972 alone we accounted for 17 of these convictions.

In checking figures in the past years, we found that a total of 79 convictions on D.W.I.s was obtained for the years 1968, 1969, 1970 and 1971.

I feel that the primary reason on our success to D.W.I.s is the fact that the State furnished this Department with the Gas Chromatograph and the training for the Officers so that they could take advantage of this piece of equipment.

There is no doubt in my mind, that if these drinking drivers had been allowed to continue to drive on the streets of Bozeman and the highways of Montana, that our fatality rate would have been higher."

Section IV

Consumer Protection

Services in this category are practically nonexistent. Food samples and consumer products may be examined in response to specific complaints. 28 food samples, 4 drug samples and 5 miscellaneous products were tested. A grant application has been submitted by the Environmental Services Bureau to FDA which includes money for the laboratory to do quality control tests on samples of food collected by environmental services field men. In the chemistry laboratory this would consist of testing for heavy metals and, in the microbiology laboratory, examination for filth and bacteria.

Also in this category we performed 1,437 tests to determine total cholesterol levels in blood collected in adult screening clinics carried out under the Community Disease Control Program. (Cost in the laboratory for these tests was \$2,587). This activity will be continued and broadened in 1973.

B. Microbiology Laboratory Bureau

Section I Bacteriology

1. Determinative bacteriology (species identified in the general diagnostic microbiology laboratory)

Species	Frequency	Source
<u>Aeromonas hydrophila</u>	2 (+1) *	1 animal (calf); 1 proficiency specimen
<u>Arizona hinshawii</u>	1	proficiency specimen
<u>Bacillus cereus</u>	5 (+1)	3 wound; 2 food
<u>Bacillus circulans</u>	1	food
<u>Bacillus</u> spp.	17 (+6)	3 environment; 2 food; 2 CSF; 2 urine; 1 wound; 1 cat bite; 1 blood; 1 ear; 1 bronchial washing; 1 abdominal surgery; 1 animal; 1 proficiency
<u>Bacteroides fragilis</u>	32 (+17)	16 wound; 5 abscess; 4 abdominal cavity; 2 peritoneal cavity; 2 blood; 1 cervix; septic abortion; 1 foreskin; 1 proficiency
<u>Bacteroides incommunis</u>	5 (+2)	2 wound; 1 abscess; 1 colon contents; 1 proficiency
<u>Bacteroides melaninogenicus</u>	2 (-2)	2 abscess
<u>Bacteroides variabilis</u>	6 (+4)	3 abscess; 1 wound; 1 cyst; 1 colon contents
<u>Bacteroides</u> spp.	2 (-3)	1 abscess; 1 wound
<u>Citrobacter freundii</u>	3 (-1)	1 wound; 1 ear; 1 proficiency
<u>Clostridium bifermentans</u>	1	wound
<u>Clostridium cadaveris</u> (capitovale)	1	wound
<u>Clostridium innocuum</u>	3 (+2)	1 abscess; 1 wound; 1 colon
<u>Clostridium perfringens</u>	17 (-6)	6 wound; 4 environment; 1 CSF; 1 gall bladder; 1 toe drainage; 1 ear; 1 eye; 1 abdominal fluid; 1 forehead lesion
<u>Clostridium sordellii</u>	1 (-1)	wound

* Numbers in () = change from F.Y. 1971

<u>Clostridium sporogenes</u>	1	abscess
<u>Corynebacterium</u> Group C	1	sebaceous cyst
<u>Corynebacterium</u> spp.	24 (+3)	6 abscess; 3 urine; 2 cyst; 2 wound; 2 eye; 2 proficiency; 1 vaginal; 1 lung; 1 animal (dog); 1 gall bladder; 1 uterus; 1 prostatic secretion
<u>Enterobacter aerogenes</u>	1 (-2)	abscess
<u>Enterobacter agglomerans</u>	9 (+2)	1 heel drainage; 1 urethral; 1 sputum; 1 wound; 1 abscess; 1 abdominal cavity; 1 amputated arm; 1 appendix; 1 proficiency
<u>Enterobacter cloacae</u>	5 (-4)	1 wound; 1 ear; 2 food; 1 proficiency
<u>Enterobacter cloacae</u> ABERRANT	6 (+1)	2 abscess; 1 wound; 1 sputum; 1 urine; 1 source not stated
<u>Enterobacter hafniae</u>	1 (-1)	proficiency
<u>Enterobacter liquefaciens</u>	2 (-1)	1 urine; 1 sputum
<u>Escherichia coli</u>	64 (-4)	32 urine; 7 abscess; 3 wound; 2 CSF; 2 environment; 1 appendix; 1 cyst; 1 ulcer; 1 eye; 1 peritoneal cavity; 1 throat; 1 abdominal drainage; 1 cord of baby; 1 stomach of baby; 9 proficiency
<u>Escherichia coli</u> (H ₂ S positive- resembles) 1		cystoscopy
<u>Eubacterium lentum</u>	1	abscess
Group HB-1 (proposed <u>Eikenella corrodens</u>)	4	2 abscess; 1 wound; 1 Caldwell-Luc
Group IIK, type 1 (possible <u>Xanthomonas</u>)	1	environment
Group IIIb	1	heel drainage
Group Va	1	penile discharge
Group Ve	1 (-1)	environment
<u>Haemophilus aphrophilus</u>	2	1 abscess; 1 wound
<u>Haemophilus influenzae</u> type a	3	1 CSF; 1 nasal; 1 sputum 6 CSF; 2 proficiency; 1 abscess; 1 throat; 1 nasopharyngeal 3 eye; 2 sputum; 2 throat; 1 CSF; 1 source not stated; 1 thoracentesis; 1 nasopharynx
<u>Haemophilus influenzae</u> type b	11 (+9)	
<u>Haemophilus influenzae</u> no type	11	

<u>Haemophilus parahaemolyticus</u>	2 (+1)	1 throat; 1 proficiency
<u>Haemophilus parainfluenzae</u>	8 (+3)	5 throat; 1 wound; 1 abdominal cavity 1 antrum
<u>Haemophilus vaginalis</u>	1	vaginal
<u>Herellea vaginicola</u> (proposed <u>Acinetobacter calcoaceticus</u>)	10	3 sputum; 1 ear; 1 food; 1 pericardial fluid; 1 ankle; 1 ulcer; 1 throat; 1 environment
<u>Klebsiella ozaenae</u>	2 (+1)	1 sputum; 1 throat
<u>Klebsiella pneumoniae</u>	8 (-10)	2 wound; 1 abscess; 1 ulcer; 1 throat 1 blood; 1 urine; 1 cord of baby
<u>Lactobacillus</u> spp.	8 (+3)	3 urine; 2 sputum; 1 abscess; 1 wound 1 food
<u>Micrococcus</u> spp.	10 (+7)	2 urine; 2 abscess; 1 dog bite; 1 eye; 1 ear; 1 food; 1 blood; 1 drainage infected gland
<u>Mima polymorpha</u> (proposed <u>Acinetobacter calcoaceticus</u>)	12 (-2)	2 urine; 2 abscess; 2 sputum; 1 leg; 2 environment; 1 seroma fluid; 1 abdominal fluid; 1 proficiency
<u>Moraxella nonliquefaciens</u>	1	nasopharynx
<u>Moraxella osloensis</u>	5 (+4)	2 urine; 1 eye; 1 ear; 1 proficiency
<u>Neisseria catarrhalis</u>	1	proficiency
<u>Neisseria gonorrhoeae</u>	2 (+1)	proficiency
<u>Neisseria lactamica</u>	2	proficiency
<u>Neisseria meningitidis</u> Group A	1	proficiency
<u>Neisseria meningitidis</u> Group B	1	bronchial washing
<u>Neisseria meningitidis</u> Group C	2	CSF
<u>Neisseria meningitidis</u> Slaterus Type Z	1	throat
<u>Neisseria sicca</u>	3 (+1)	2 sputum; 1 proficiency
<u>Pasteurella "gas"</u>	1	dog bite
<u>Pasteurella multocida</u>	4	3 cat bite; 1 hand

<u>Pasteurella ureae</u>	1	sputum
<u>Peptostreptococcus</u> CDC Group 1	5	2 abscess; 2 cyst; 1 blood
<u>Peptostreptococcus</u> CDC Group 2	4 (-2)	3 abscess; 1 fluid aspirated from lung
<u>Peptostreptococcus</u> CDC Group 3	2	1 abscess; 1 wound
<u>Peptostreptococcus</u> spp.	5	2 wound; 2 amputated arm; 1 abscess
<u>Propionibacterium acnes</u>	7 (-2)	2 blood; 1 CSF; 1 ulcer; 1 open sore; 1 incision drainage; 1 pacemaker incision
<u>Propionibacterium avidum</u> (see <u>Corynebacterium</u> Group C)		
<u>Proteus mirabilis</u>	12 (+4)	4 abscess; 2 urine; 2 sputum; 1 wound; 1 ear; 1 nose; 1 proficiency
<u>Proteus morganii</u>	7 (+3)	5 urine; 1 CSF; 1 abscess
<u>Proteus vulgaris</u>	5 (+4)	1 urine; 1 wound; 3 proficiency
<u>Providentia stuartii</u>	3	urine
<u>Pseudomonas aeruginosa</u>	16 (-2)	5 urine; 3 ear; 3 abscess; 1 food; 1 eye; 1 tracheal secretions; 1 ankle; 1 proficiency
<u>Pseudomonas alcaligenes</u>	1 (-3)	animal (calf)
<u>Pseudomonas cepacia</u>	2 (+1)	1 umbilical cord; 1 kidney surgery
<u>Pseudomonas maltophilia</u>	9 (+5)	4 environment; 2 sputum; 1 wound; 2 source not stated
<u>Pseudomonas stutzeri</u>	5 (+3)	1 pustule; 1 proficiency; 3 environment
<u>Pseudomonas</u> spp., psychrophilic	2	1 eye; 1 environment
<u>Pseudomonas</u> spp., medium temperature range	5 (+8)	2 urine; 2 sputum; 1 wound
<u>Pseudomonas</u> spp.	7	3 environment; 1 ear; 1 traumatic amputation; 1 sputum; 1 right subdural
<u>Salmonella enteritidis</u> ser. Rubislaw	1	turtle
<u>Salmonella</u>	4	proficiency
<u>Serratia marcescens</u> subs. <u>marcescens</u>	3 (+2)	1 abscess; 1 sputum; 1 proficiency
<u>Shigella dysenteriae</u>	1	proficiency
<u>Shigella flexneri</u>	1	proficiency

<u>Shigella sonnei</u>	2	proficiency
<u>Staphylococcus aureus</u>	49 (-26)	10 abscess; 9 ear; 7 wound; 5 proficiency 4 nose; 2 finger; 2 lip; 2 throat; 1 eye; 1 vaginal; 1 leg; 1 skin vesicle; 1 hand; 1 nail scrapings; 1 lymph node; 1 abdominal drainage
<u>Staphylococcus epidermidis</u>	31 (-4)	6 abscess; 4 urine; 3 wound; 2 eye; 1 prostatic secretion; 1 brain--autopsy; 1 pilonidal cyst; 1 food; 1 cervical; 1 incision drainage; 1 hand; 1 blood; 7 proficiency
<u>Streptococcus</u> , alpha	31 (+10)	5 wound; 4 abscess; 2 amputated arm; 1 ear; 2 blood; 2 cervix; 1 abdominal cavity; 1 eye; 1 uterus; 1 knee fluid; 1 throat; 1 food; 1 mouth; 1 CSF; 7 proficiency;
<u>Streptococcus</u> , Group A	22 (-8)	9 abscess; 4 ear; 3 wound; 2 eye; 1 hand; 3 proficiency
<u>Streptococcus</u> , Group B	18 (+12)	4 urine; 4 vaginal; 2 CSF; 2 abscess; 1 foot drainage; 1 prostate; 1 sputum; 1 navel; 2 proficiency
<u>Streptococcus</u> , Group C	1	vaginal
<u>Streptococcus</u> , Group F	1	wound
<u>Streptococcus</u> , Group G	3 (+1)	1 blood; 1 abdominal; 1 proficiency
<u>Streptococcus</u> , beta hemolytic, Not Groups ABCDFG	8 (+7)	3 abscess; 1 urine; 1 sputum; 1 buccal cavity; 1 abdominal cavity; 1 appendix
<u>Streptococcus equisimilis</u> or <u>Streptococcus equi</u>	1	sputum
<u>Streptococcus faecalis</u>	23 (-1)	5 urine; 3 abscess; 2 abdominal fluid; 1 eye; 1 ulcer; 1 ear; 1 genital blister; 2 environment; 5 proficiency; 2 wound
<u>Streptococcus pneumoniae</u>	7 (+3)	3 CSF; 1 eye; 1 ear; 1 sputum; 1 proficiency
<u>Streptococcus nonhemolytic</u>	1	sinus
<u>Veillonella parvula</u>	2 (+1)	1 abscess; 1 tooth
<u>Xanthomonas</u> spp. (IIk, type 1)	3	3 environment

Listed above are 648 organisms from various sources isolated in the general diagnostic microbiology laboratory during this period.

2. Enteric bacteriology

Total specimens 574

examinations 2634

Salmonella recovered: 62

Salmonella enteritidis serotypes

Agona	1
Enteritidis	7
Infantis	3
Java	3
Manhattan	4
Minnesota	1
Montevideo	1
Newport	1
Paratyphi B var. Odense (monophasic)	1
Saint Paul	2
Thompson	2
Typhimurium	15
Typhimurium var. Copenhagen	4
Salmonella 4.12:-:1,2 (monophasic)	1

Salmonella not typed (repeat specimens on patients whose original isolates have been typed) 15

Shigella recovered: 39

Shigella flexneri

1a	2
2a	17
4a	2
6	6

Shigella sonnei 11

Enteropathogenic Escherichia coli 2

Other enteric organisms 38

Total enteric organisms recovered = 141

There was a considerable decrease in enterobacteriology this year. In 1971 there were 6,664 examinations on 1,111 specimens with 216 Salmonellas and 106 Shigellas recovered.

3. Rheumatic fever prevention - Streptococcal throat culturing project and antistreptolysin "O" tests.

Throat cultures for streptococci = 2,482

Group A	=	339
Group B	=	15
Group C	=	58
Group F	=	29
Group G	=	72
non-Groupable	=	88

601 Total positive for beta hemolytic streptococci

On several occasions Group G streptococci seems to have been implicated in outbreaks of pharyngitis in children.

This year we had three cases of rheumatic fever in a group of children and Group A, M-type 5 was the implicated organism. This is the same type which was responsible for rheumatic fever among a group of Indian children in 1970. In the period around 1956-57, M-type 12 was causing some cases of glomerulonephritis in the state. Other M-types associated with pharyngitis and complications in the last 15 years in Montana have been 1, 4, 6, 9, 19, 22. During 1943-44 the types usually involved in clinical infections in my army camp in Texas were 1, 9, 11, 13, 17, 19, 23, 24, 28, 33, and we had a large food poisoning outbreak due to type 18. When indicated, cultures are referred to the Streptococcal Disease Section, Center for Disease Control, Fort Collins Laboratories for typing.

Last year we thought we should offer tests to determine antistreptolysin "O" titers. However, only 17 clinical specimens were sent in and there was one paired set. Because of the poor response and receipt of single specimens with no second specimen, this service has been discontinued.

The work covered in Section I consisted of 5,499 specimens on which 7,084 examinations were conducted for a total cost of \$31,344.

Section II

Virology

	SEROLOGY		VIRUS ISOLATION	
	Total No.	No. Positive	Specimens Total No.	No. Positive
Influenza Group A	395	78	42	12
Influenza Group B	205	0		
Enteroviruses	201	See below	72	(4 ECHO - 9
Adenovirus	224	7		(1 Polio - 1
<u>Mycoplasma pneumoniae</u> (PPLO)	187	17		
Herpes simplex (encephalitis)	176	14	5	2
Mumps (meningoencephalitis)	81	24	4	0
Rubeola	92	2	2	0
Colorado tick fever	130	7	26	7
Rocky Mt. Spotted fever	130	0		
Q Fever	75	0		
Western Equine Encephalitis	107	3		
St. Louis Encephalitis	107	0		
Totals	2110		151	

NOTES: 1972 was more productive for the Virus Laboratory than 1971. This was an Influenza A₂ year - in sharp contrast to the year before. Perhaps we will be able to forget about Influenza A in 1973 but we are about due for some Influenza B. The progress of this year's epidemic is reflected in cases reported to the department:

Influenza cases for week ending:	12/18 119	1/15 573
	12/25 387	1/22 292
	1/1 355	1/29 208
	1/8 940(peak)	2/5 227
		2/12 136

The first laboratory-confirmed case came from Plentywood and had an onset date of October 5, 1971. The peak was reached the first week of January; it seemed to require the holiday season to spread the virus around. Recent major variants of Type A Influenza virus have first appeared in Montana in August 1957 (Asian) and in October 1968 (Hongkong variant). We should expect another one to appear about 1977 or 1978.

Western Equine encephalitis virus seems to be more active than in any year since 1965 (see Laboratory Bulletins Nos. 39, 41, and 42). Complement fixation tests on suspect clinical cases are done here but hemagglutination - inhibition tests for antibody-surveys are done at the Rocky Mountain Laboratory in Hamilton. Mosquito collections for virus isolation attempts are also sent there as are blood specimens from sentinel chickens.

Rubella hemagglutination-inhibition tests to determine status of immunity to German measles was big business this year. The test was performed routinely on all serum specimens coming to the laboratory for premarital serology, for pre-natal serology, and from clients of Family Planning Clinics.

Rubella HAI tests performed = 13,903 at a cost of \$1.30 each = \$18,074.

Persons found to be without immunity to German measles = 686 (5.7%)

We had a record number (7) of Colorado tick fever virus isolations this year. One strain was recovered from a blood specimen taken about three weeks after onset. Usually it is difficult to find the virus in specimens taken after eight days. L-cell tissue cultures are proving to be an effective medium for making primary isolations from clotted blood. This is a disease which is largely ignored and I still hold to my estimate made some years ago of at least 200 cases of Colorado tick fever in Montana each year.

Infectious mononucleosis (EB VIRUS) continues to occur more frequently than five years ago although not at the level of 1971. The Ox-cell hemolysin test is performed in our laboratory as a confirmatory procedure.

Number of tests done = 127; positive = 30
(1971 tests = 253; positive = 30)

Serums from suspect cases of serum hepatitis (hepatitis - B) to be tested for Australia Antigen (HBAG) are sent to the Phoenix laboratories of CDC.

Amount invested in the virology programs = \$19,309
plus Rubella HAI = \$18,074

TOTAL \$37,383

Specimens from suspect cases of Chlamydial infections (psittacosis, lympho-granuloma venereum (LGV), trachoma, inclusion conjunctivitis) are sent to Dr. Robert Philip at the Rocky Mountain Laboratory in Hamilton for investigation. Ten sera from suspect cases of LGV forwarded to him for testing by "Micro-immunofluorescence" have reacted positively. According to Dr. Philip, this suggests that these patients at some time have been infected by some member of the group. At least four had clinical signs consistent with a diagnosis of active LGV.

Diagnostic studies for rabies are done at the Laboratory of the Animal Health Division of the Department of Livestock in Bozeman.

The only serologic test (other than neutralization tests for identification of isolates) we perform for enteroviruses is poliomyelitis tissue-culture neutralization. Here are the results:

Number of tests	=	201
positive against all three types	=	91
negative with all three types	=	7
positive against type 1 only	=	11
positive against types 1 and 2	=	33
positive against types 1 and 3	=	16
positive against types 2 and 3	=	22
positive against type 2 only	=	14
positive against type 3 only	=	7

201

During June, four isolates of ECHO 9 virus were made. This proved to be the beginning of a rather extensive outbreak of aseptic meningitis during the summer. Throat swabs seemed to be as satisfactory as rectal swabs for recovering strains of virus.

One of the major accomplishments in the bureau has been the initiation of a comprehensive testing program to detect persons susceptible to German measles. Currently we are performing around 2,000 rubella hemagglutination-inhibition tests each month. These tests are performed on all serums from clients of Family Planning clinics, all prenatal and premarital serological specimens and on other specimens when requested by the physician. Here is a summary of work in this program.

Rubella Hemagglutination-Inhibition Tests.

Budget 0317 Immunization Project			Budget 0410 Family Planning State Grant			
Month	Number Tested	Number non-immune	<u>Breakdown</u>			
			Prenatal	Premarital	Family Planning	Diagnostic and other
July	681	89	402	218	- -	61
August	1,005	109	535	357	- -	113
Sept.	731	64	475	177	13	66
Oct.	916	50	613	163	24	116
Nov.	975	47	289	553	6	127
Dec.	1,196	31	630	410	40	116
Jan.	792	20	425	215	49	103
Feb.	1,021	28	503	306	68	144
March	1,016	26	437	385	66	128
April	1,002	61	465	266	140	131
May	2,662	67	674	469	182	1,337
June	1,906	94	607	509	128	662
TOTALS	13,903	686 (5.7%)	6,055	4,028	716	3,104

Our cost for a rubella HAI test when done in large volume \$1.30
 Charge when done in a clinical laboratory on an individual specimen basis \$10.00

Amount invested in this program F.Y. 1972	\$18,074
Amount chargeable to:	
0410 Family Planning State Grant	\$931
0317 Immunization Project	\$17,143

Section 69-4611.107, RCM 1947 The department shall approve a standard serological test for syphilis. It shall also approve laboratories which may make such tests. On request the department shall make laboratory tests required by this chapter without charge.

This law applies mainly to premarital and prenatal tests. Indirectly, it also involves blood transfusion services because transfused blood is supposed to be tested for syphilis antibodies.

Work in the laboratory in connection with control of venereal disease accounts for our largest single item of cost (\$45,514). Here is a summary of it:

VDRL - 31,823 examinations 1608 Positive (5.5%)

Breakdown

Premaritals = 5,617

Marriages in Montana F.Y. 1972 = 7,368 so 38.1 per cent of the tests were performed in the State Laboratory.

Prenatals = 6,359

Live births in Montana F.Y. 1972 = 11,508 so 55.2 per cent of the tests were performed in the State Laboratory.

FTA-ABS = 948 examinations Positive 349 (36.8%)

Spinal Fluid = 287 examinations Positive 6 (2.1%)

Cost of this project:

32,110 VDRL (includes spinal fluids) @ \$1.00 = \$32,110

948 FTA-ABS @ \$5.70 = 5,404

TOTAL for Serological Tests for Syphilis \$37,514
Gonorrhea Control Program 8,000

TOTAL COST OF VD CONTROL IN THE LABORATORY \$45,514

The amount spent on serological tests for syphilis is all out of proportion in relation to its importance in the present crisis in VD control. However, the only way we could reduce this expenditure would be to repeal premarital and prenatal laws and I don't think we are ready for that.

Emphasis has been placed this year on culturing the human female for Neisseria gonorrhoea. We supply transgrow media for shipment of specimens to the state laboratory. All clients of family planning clinics are cultured and in one city all obstetrical and gynecological patients are cultured. Here is a summary of the GC laboratory work.

Gonorrhea cultures - Fiscal Year 1972

Month	Number Tested	Number Positive	VD Program	Breakdown Family Planning	Positive from F.P.
1971					
July	77	8	77	--	--
August	67	7	67	--	--
Sept.	70	6	70	--	--
Oct.	67	6	67	--	--
Nov.	57	7	57	--	--
Dec.	46	4	42	4	1
1972					
Jan.	73	8	66	7	2
Feb.	98	7	83	15	0
March	138	7	92	46	0
April	205	9	99	106	1
May	256	9	101	157	2
June	318	14	146	172	2
TOTALS	1,472	92	967	507	8

Additionally there were 397 slides sent to the laboratory for examination for Gram-negative diplococci; 74 (18.6%) of these were positive.

Of the 1,472 cultures submitted for *N. gonorrhoeae*, 92 (6.3%) were positive.

Beginning in December 1971, attempts were made to secure a culture on all clients of family planning centers; we received 507 cultures so designated of which 8 (1.6%) were positive.

In fiscal year 1973 these projects call for 5,000 cultures at a cost of \$2.50 per specimen. Our average cost for bacteriological culture (including identification of organism) on a low-volume basis is \$5.70. However, if we can increase GC cultures to 5,000 annually, our cost will drop to \$2.50.

In June we received 318 cultures (146 from the VD control program and 172 from Family Planning). This gives an annual rate of 3816. To get the benefit of lower costs we must average 416 cultures per month.

The cost of the gonorrhea control program to the laboratory for fiscal year 1972 was about \$8,000.

Here are figures for September 1972 to compare with those given above.

September 1972 = 512 cultures for GC (34 positive)

F.P. Centers	254 cultures	(5 positive)
General VD Program	258 cultures	(29 positive)

In addition we received 17 slides for examination with 7 positive from Gram-negative diplococci.

Attention in the culturing program has been given primarily to the human female. Increasingly we are becoming aware of the asymptomatic male carrier and efforts should be made to find and culture him.

Section IV Special Microbiology

1. Non-VD serology:

Agglutination tests for brucellosis	87	(6 positive)
Agglutination tests for tularemia	86	(5 positive)
Agglutination tests for leptospirosis	20	
referred to the Rocky Mountain Laboratory		(no positives)
Antistreptolysin "O"	31	(13 positives)
		Includes CDC proficiency tests

COST = \$1,104

2. Mycobacteriology

Total specimens received	2,445
Examinations performed	10,422
Antibiotic susceptibilities	81

<u>M. tuberculosis</u>	138
Atypical mycobacteria	34
<u>M. avium-intracellulare</u>	5
<u>M. gordonae (M. sp. aquae)</u>	12
<u>M. kansasii</u>	5
<u>M. scrofulaceum</u>	4
<u>M. flavescens</u>	1
<u>M. terrae</u>	1
<u>M. fortuitum</u>	1
<u>M. marinum</u>	3
Unidentified mycobacteria	1
Unidentified Group III	1
Rhodochrous Group	1

Cost = \$19,303

3. Parasitology

Total specimens received	161
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Parasites identified:

<u>Musca domestica</u> larva	1
<u>Giardia lamblia</u>	12
<u>Entamoeba coli</u>	12
<u>Trichuris trichiura</u>	5
<u>Diphylbothrium latum</u>	1
Hookworm eggs	6
<u>Ascaris lumbricoides</u>	7
<u>Endolimax nana</u>	3
<u>Entamoeba histolytica</u>	1
<u>Chilomastix mesnili</u>	1
<u>Iodamoeba butschlii</u>	1
<u>Clonorchis sinensis</u>	4
<u>Echinostome</u> sp.	1
<u>Dientamoeba fragilis</u>	1
<u>Hymenolepis nana</u>	1
<u>Balantidium coli</u>	2
<u>Strongyloides stercoralis</u>	2
<u>Enterobius vermicularis</u>	1

Total 62

Malaria

Total specimens received	9
Parasites identified:	
<u>Plasmodium vivax</u>	4
<u>Plasmodium malariae</u>	1

Parasitology serology

Total specimens received	53	
	Received	Positive
Toxoplasma	47	6
Trichinella	4	0
Malaria	1	0
Amebiasis	1	0

Cost of parasitology = \$918

4. Mycology

Total specimens received	153
<u>Dermatophytes</u>	16
<u>T. schoenleinii</u>	1
<u>T. violaceum</u>	1
<u>T. mentagrophytes</u>	7
<u>T. rubrum</u>	3
<u>T. verrucosum</u>	1
<u>M. canis</u>	3
<u>Systemic</u>	50
<u>Sporothrix schenckii</u>	1
<u>Nocardia asteroides</u>	2
<u>Aspergillus niger</u>	1
<u>Aspergillus flavus-</u> <u>aryzae group</u>	1
<u>Yeasts:</u>	
<u>Candida tropicalis</u>	4
<u>Candida albicans</u>	16
<u>Candida krusei</u>	1
<u>Candida guilliermondii</u>	3
<u>Torulopsis glabrata</u>	6
<u>Geotrichum candidum</u>	1
<u>Rhodotorula sp.</u>	7
<u>Cryptococcus albidus</u>	1
<u>Coccidioides immitis</u>	2
<u>Trichosporon cutaneum</u>	1
<u>Saccharomyces cerevisiae</u>	1
<u>Trichosporon penicill-</u> <u>atum</u>	1
Unidentified yeast	1
<u>Contaminants</u>	43
<u>Penicillium sp.</u>	10
<u>Mucor sp.</u>	1
<u>Cladosporium sp.</u>	3
<u>Streptomyces sp.</u>	10

<u>Fusarium</u> sp.	3
<u>Scopulariopsis</u>	2
<u>Alternaria</u> sp.	3
<u>Popularia</u>	1
<u>Cephalosporium</u> sp.	1
<u>Rhizopus</u>	3
<u>Aspergillus</u> sp.	3
Saprophyte	3

Mycology Serology

Total specimens received 81

	received	positive
Histoplasmosis	27	7
Blastomycosis	27	2
Coccidioidomycosis	27	1

Cost of Mycology = \$872

Section V. Maternal and Child Health - Testing of newborns for PKU under Sections 69-4116.16 and 69-3209, RCM 1947 and State Board of Health Regulation 20-001.

Live births in Montana = 11,508; compared with 12,252 last year (-6%)

PKU tests on newborns = 11,232 (Includes those done by the hospitals)
(9,899 specimens processed in State Laboratory)

Estimate that at least 276 were missed for a 97.6 percent coverage compared with a 99 percent coverage last year.

No significant findings this year.

Cost of this project in the laboratory:

(9,899 specimens @ \$1.30* = \$12,869

*This relatively high unit cost is due to our low volume. States which process 200,000 or more Guthrie tests a year are able to handle specimens at a cost of \$0.55 each.

Recently we received an interesting report from Dr. Robert A. MacCready "Admissions of Phenylketonuric Patients to State and Provincial Residential Institutions in the United States and Canada Before and After the Beginnings of Phenylketonuric Screening Programs of the Newborn". There is an almost complete absence of admissions of phenylketonurics born later than 1961 (after the start of screening programs).

The test used in the program for screening newborns for phenylketonuria is the Guthrie bacterial inhibition test. This is not the best one and the question

has been raised several times as to whether it was "put over" on the state laboratories. It appears that a fluoresent method is better. However, North Carolina is the only state which has gone to fluorometry routinely and I am going to try and get to the bottom of this situation. Also, a new bill has been written to replace the "PKU Law". The main feature of this is permission to include tests for other inborn errors of metabolism; and it does not mention any particular screening method.

Section VI Environmental Microbiology

1. Annual Report of the Montana State Water Laboratory (Microbiology) Fiscal Year 1972

This report includes a tabulation of the activities of the water bacteriology laboratory and pertinent comments which should be of help in improving its efficiency and effectiveness. The data was compiled by Donna Atlas, assistant, and by Ella Mae Howard, Bacteriologist in charge. Prior to March 20, 1972, Bruce Icenoggle was the Bacteriologist, so much of the information covers his activities. We plan to compile a similar report each year to aid in determining the validity and usefulness of work done.

The analytical procedure used for water samples is the five tube fermentation set-up as recommended in Standard Methods. Final analysis is made on the reaction of the confirmed test; unsatisfactory reports are based on a positive reaction in the confirmed test. This accounts for the major portion of the work performed.

Water samples are received from all municipalities in the state and from government agencies (miscellaneous suppliers). Private concerns also send samples to the lab and this accounts for approximately 10 per cent of the work load.

Most probable number (MPN) analysis is routinely done on selected river samples. These results are part of a stream-pollution monitoring program carried out by the Water Quality Bureau. This information is also important to treatment plant operators who, with this information, are better able to judge the amount of chlorination necessary for adequate treatment.

These MPN samples must be shipped in reduced temperature packing and must arrive at the lab within 24 hours after collection. With the distant geographical location of some of the sampling stations, the 24 hour time limit is difficult to meet. Table 3 illustrates this point with reference to Miles City and Glendive. It would seem that these samples should be discontinued or they should be analyzed in a laboratory closer to these towns. If indeed this information is meaningful, this situation should be looked into.

After March 20, a series of completed tests were conducted as check on technique and also to get some idea of the source of the organisms responsible for the positive results. This procedure employed EMB agar medium and the IMVIC series referenced in Standard Methods.

With the current emphasis on fecal coliforms, the laboratory hot water bath has been calibrated to 44.5 degrees centigrade and daily temperature readings were made to measure temperature variations of the bath. It was found to hold within 2-3 degrees. Subsequently, some 60 samples using the Elevated Temperature Technique (ET) were run to detect fecal coliforms. Each sample was submitted to a completed test and to the ET test. The results were then correlated to determine the accuracy of the water bath in detecting fecal coliforms. At this time, it is felt that with further testing, ET examinations could be a reliable procedure for analysis of fecal coliforms in our lab.

During the month of May a water suitability test was run on the distilled water used in the laboratory for media preparation and dish rinsing. According to Standard Methods requirements, the distilled water is satisfactory and non-toxic to the common coliforms.

The following comments come partly from my limited experience and from comments in the EPA current literature. These comments are meant to improve the laboratory service to the people of Montana and to improve the actual lab work done.

The biggest immediate improvement would lie in streamlining the recording and reporting procedures. At present, duplications slow up the work procedures and require unnecessary secretarial attention. Since this report has been compiled, we have started changes in this area; and by January 1, we hope to have this problem solved.

Also related to the "bookwork" of the lab, we regularly receive water samples from individuals who cannot or will not fill out the accompanying data sheet on the particular water source. The problem appears not to be one of understanding but one of not taking time to read directions and fill out the answers. These data sheets and explanation forms currently in use are too detailed for the average person to bother with. Knowing full well how I personally feel about long questionnaires, I cannot blame these people. Perhaps a shortened and more "to-the-point" form could be devised that would yield adequate information and would also be instructive. South Dakota provides an excellent example of this.

It should also be mentioned that the lab receives a number of feedback letters and telephone calls, all of which are concerned with an unsatisfactory report. Most of these inquiries are desiring information as to how to correct the problem or are requests for a fuller explanation of what might be causing the problem. I do not feel that the lab personnel should be involved in this; the environmental engineers are capable and responsible for providing this information. We do our best to see that all letters and calls are referred; however, such second hand passing has a way of being laid aside. If people take the time and money to have their water tested by experts, they should be also entitled to professional advice as to what the results mean. In that we are a public health group, I feel this is one area where we have a chance to be of service and to promote goodwill towards the department. One suggestion that I feel would do a lot to help the situation, would be to install a direct extension line between the lab and the environmental department. We could then direct these calls to the proper channel for immediate attention.

EPA officials noticed during their inspection visit of last January that we regularly run from one to three known raw water samples from various cities. These tests and results are of no apparent value. A coliform test on known raw waters will almost always test bad. MPN tests are not performed in these particular cases,

therefore, the degree of contamination is not determined. These raw samples are in addition to those collected for sanitary safety checks on the municipal supply. The cities noted are Columbia Falls 1, Culbertson 2, Deer Lodge 1, Hardin 2, Harlem 3, Libby 1, Missoula 1, Red Lodge 1, St. Ignatius 1. In these cases, the testing of the raw water samples do not help treatment operators and do not yield information on the degree of pollution. As far as we can determine, this practice does not help anyone and only creates extra work for the lab.

It should be noted that we are willing to do MPN tests for those cities whose treatment plant operators feel that they need the information in determining degree of chlorination necessary.

Before abrogating these remarks, I would like to mention that we are capable of doing other bacteriological determinations such as sulfate reduction, total counts, cellulolytic counts, etc. We are most willing to be of service to anyone. The following tables are summaries of the actual number and types of test run during the year of 1971. Hopefully, they are beneficial to planning and purchasing for the future years.

TABLE 1. MONTHLY SUMMARY		FISCAL YEAR 1971 JULY 1971 - JUNE 1972							
Month	Samples Received	Negative Confirm.	Positive Confirm.	Negative Pres.	% Confirm.	MPN	Dairy	Other	Total Tests
July 1971									
Private	208	9	71	128	34.1				
Public	665	16	32	617	4.8	30			
Misc.	143	35	2	106	1.4				
Totals	1016	60	105	851	10.3		45		1211
August 1971									
Private	211	9	81	121	38.4	1			
Public	826	38	51	737	6.1	42			
Misc.	148	7	26	115	17.6	3			
Totals	1185	54	158	973	13.3	46	80		1443
Sept. 1971									
Private	188	14	64	110	34.0				
Public	674	38	46	590	6.8	32			
Misc.	194	9	25	160	12.9				
Totals	1056	61	135	860	12.8	32	71		1284
Oct. 1971									
Private	144	13	49	82	34.0				
Public	703	35	48	620	6.8	21			
Misc.	62	1	8	53	12.9				
Totals	909	49	105	755	11.6	21	23		1084
Nov. 1971									
Private	109	9	24	76	22.0				
Public	845	25	51	769	6.0	30			
Misc.	129	1	17	111	13.2	4			
Totals	1083	35	92	956	8.5	34	36		1244

Month	Samples Received	Negative Confirm.	Positive Confirm.	Negative Pres.	% Confirm.	MPN	Dairy	Other	Total Tests
Dec. 1971									
Private	121	9	27	85	22.3				
Public	705	29	29	655	4.1	15			
Misc.	79	7	6	66	7.6	1			
Totals	905	37	62	806	6.9	16	47		1020
Jan. 1972									
Private	66	7	18	41	27.2				
Public	675	55	19	601	2.8	18			
Misc.	78	4	7	67	8.9				
Totals	819	66	44	709	5.4	18			947
Feb. 1972									
Private	107	7	20	80	18.7				
Public	797	28	15	754	1.8	17			
Misc.	86	1	4	81	4.7				
Totals	990	36	39	915	3.9	17			1082
March 1972									
Private	73	5	45	23	61.6				
Public	763	18	14	731	1.8	13			
Misc.	119	2	18	99	15.1				
Totals	955	25	77	853	8.1	13			1070
April 1972***									
Private	148	18	35	95	23.6				
Public	645	51	14	580	2.2	20			
Misc.	79	3	5	71	6.3	5			
Totals	872	72	54	746	6.2	25		11 neg* 29 pos	1124
May 1972***									
Private	213	18	49	146	23.0	1			
Public	796	42	32	722	4.0	30			
Misc.	171	14	12	145	7.0				
Totals	1180	74	93	1013	7.9	31		14 neg* 12 pos	1431
June 1972									
Private	307	31	109	167	35.5				
Public	760	56	43	661	5.7	24			
Misc.	102	13	17	72	16.7				
Totals	1169	100	169	900	14.5	24		1**	1464

* Elevated temperature

** Photosynthetic

*** Completed negative: April = 16, May = 13
Completed positive: April = 41, May = 13

TABLE 2. YEARLY TOTALS

<u>Potable Water</u>			
	<u>Total</u>	<u>Positive</u>	<u>% Positive</u>
Public Supplies (Municipalities)	8854	394	4.4
Private	1895	592	31.2
Misc. (Government and Schools)	1390	147	10.5
Total Water Samples Received	12,139		
Total Examinations Performed (Includes all categories)	14,404		
Percent confirmed positive	9.3%		
<u>MPN</u>			
Total Samples Received	307		
Total Examinations Performed	1228		
<u>Dairy</u>			
Total Examinations	302		
<u>Miscellaneous Bacteriology</u>			
(Completed, Photosynthetic, Elevated Temperature)			
Total Completed tests	83		
Photosynthetic	1		
Elevated temperature	66		

TABLE 3. MPN SAMPLE AGE

City	Samples received within 24 hours	Samples received after 24 hours	Total samples received	Percentage of samples received late for testing
Billings	20	4	24	16.6%
Bozeman	23	2	25	8.0
Chinook	20	4	24	16.6
Conrad	6	1	7	14.3
Forsyth	12	13	25	52.0
Fort Benton	22	4	26	15.4
Gardiner	1	12	13	92.3
Glendive	2	22	24	91.7
Great Falls	23	3	26	11.5
Hardin	20	7	27	25.9
Harlem	22	4	26	15.4
Havre	23	0	23	0.0
Laurel	20	5	25	20.0
Livingston	7	20	27	74.1
Miles City	0	22	22	100.0
Whitefish	12	5	17	29.4

We are planning to convert to the Millipore system for potable waters as soon as we can accumulate the capital for initial expenditures for equipment. This will enable reports to be made in 24 hours instead of 48 hours and will cut down on the week-end work. Many states have already made this change.

2. Food microbiology

Dairy Products:

There are two examinations per standard plate count and two per coliform count. As of January 1, these are now performed by Dairy and Egg Division.

Total Examinations Performed

302

This testing which was done for the Dairy and Egg section of the Department of Agriculture has been transferred to their laboratory in Bozeman.

Food Poisoning:

28 bacteriological examinations were made in food suspected of being a cause of food poisoning. The most troublesome organism in this respect in Montana seems to be Clostridium perfringens.

One of our most neglected areas is Consumer Protection. We hope very much to get some money from FDA so we can add food quality (microbiology and filth) determinations to our services.

3. Miscellaneous Environmental Microbiology:

Examinations in this area include identifications of sulfur and iron bacteria, alga, as well as determination of sulfate reduction in particular samples. Completed tests also are done periodically as part of the potable water testing. It should be noted that records of these examinations apparently were not kept by the bacteriologist prior to March 20.

Total Samples Received 3

Total Examinations Performed 3

Total Completed Tests 83

THE COST OF SERVICES IN ENVIRONMENTAL MICROBIOLOGY (Section VI) = \$51,052

Section VII

Hospital and Medical Facilities

The basis for this program is the certification of independent laboratories and hospital laboratories in those institutions which are not accredited by the Joint Commission for the Accreditation of Hospitals. This is carried out under title XVIII (Medicare) and title XIX (Medicaid - under contract with Welfare).

The work is done by a Medical Technologist II - Laboratory Surveyor, and he is employed by the Hospital and Medical Facilities Division and reports directly to the Administrator of that division. Professional back-up is provided by the Laboratory Division. Here are the facilities which are registered with us:

- A. Licensed as hospitals or community health facilities = 70
(25 of these are JCAH hospitals; 44 are non-JCAH hospitals;
and one is a community health facility)
- B. Registered but not in hospitals = 44
(6 of these are "Independent Laboratories")
- C. Research and Teaching Laboratories = 8
- D. Laboratories operated by the U.S. Government = 12

We have in our files some record on 134 laboratories in Montana. In addition we maintain a register of "Persons Employed in Montana to Perform Clinical Laboratory Tests". This averages about 550 names and includes Health Manpower Occupations Nos. 073.381 and 041.081 as defined in Defense Mobilization Order 8540.1).

All activities directly concerned with "facilities" are placed in this section. Our laboratory improvement program is especially important and we wouldn't have one at all if it weren't for support which the Hospital and Medical Facilities Division provides for the laboratory. Major elements in this program are:

- A. State-operated proficiency testing programs:
 - Serological tests for syphilis - 64 laboratories participating
 - Bacteriology - 69 laboratories participating
- B. State-approved external quality control programs:
 - College of American Pathologists - Basic Laboratory Survey
 - 34 laboratories participating
 - (The results are sent to us for review by our laboratory surveyor.)
- C. For our own external quality control we participate in 13 proficiency tests as follows: Toxicology (Drug Abuse); Toxicology (Alcohol); Viral Serology; Virus (Rubella); Virus Identification; Mycology; Parasitology; Parasitology (referee for Utah); Non-syphilis serology; Immunology (referee for Utah); Bacteriology (reference laboratory for the Center for Disease Control); Bacteriology (referee for Utah); Syphilis Serology. The big deficiency in this area is the lack of external quality controls for Air Quality Control and Water Quality Control. The proficiency tests listed above are supplied by the Center for Disease Control so it is up to the Environmental Protection Agency to get busy and set up a quality control system in their bailiwick.
- D. Our Laboratory Surveyor is an ex-officio member of the Med Lab Steering Committee of the Montana Medical Education and Research Foundation. We gave two courses in cooperation with them: Course No. 3 Hospital (Ecological) Microbiology with 48 persons registered and Course No. 7 Bench Training in Microbiology with 6 persons registered. The latter course is given on an individual basis in our

laboratory and provides an opportunity for a week's work with Bud Brown, an outstanding medical microbiologist. In addition, we have the six medical technologist internees from Montana Deaconess Hospital for this course and others come to the laboratory to work for shorter periods of time on special aspects of the course.

E. The Laboratory Advisory Council was promoted originally by the Hospital and Medical Facilities Division and is still supported by that division. The administrator is an ex-officio member of the council, his secretary is secretary of the council, and his laboratory surveyor is an ex-officio consultant to the council.

COST OF SECTION VII - \$26,075

Section VIII Diagnostic testing for Indian Health Service, Billings Area Office.

In the critique on our last state plan from CDC, Dr. Kokko suggested that a separate section should be made for services provided to reservation Indians. The locations from which we receive specimens are Box Elder, Browning, Crow Agency, Harlem, Lame Deer, Poplar, St. Ignatius, Fort Washakie, (Wyo.) and Billings. Each month a tabulation of services by test, by location from which received, and cost is sent to the Medical Officer in Charge, Billings Area Office. Here is a summary:

<u>SERVICE</u>	<u>No. of TESTS</u>	<u>COST</u>
Throat culture for beta-hemolytic streptococci	72	\$84.00
Guthrie test for PKU	381	495.30
Culture for Acid-fast organism*	1053	7792.20
Antibiotic sensitivity on mycobacteria*	35	395.50
Culture for identification of organism	324	1846.60
Culture for <i>N. gonorrhoea</i> **	182	1037.40
Antibiotic sensitivity test	13	106.60
Rubella hemagglutination-inhibition tests	983	1006.30
Tissue culture for virus	22	558.80
Serological test - virology	70	358.80
VDRL for syphilis	4111	4111.00
FTA-ABS for syphilis	125	788.70
Agglutination for Tularemia-Brucellosis	1	2.30
Ox-cell hemolysin test for infectious mononucleosis	1	2.30
Bacteriological analysis - drinking water	108	432.00
Antistreptolysin "O" titer	2	3.40
Parasitology	47	248.80
Totals	7,530	\$19,270.00

* These figures show where our major tuberculosis problem is - 42.5% of costs for mycobacteriology (\$19,303) went for service to reservation Indians (about 5.0% of the population).

** Beginning in November, culture for GC was separated from culture for identification of organism.

In addition to the above services, we are furnishing Sobermeters for alcohol to the Tribal Police and are processing them.

This is my personal accounting for the expenditure of about \$345,866 of public funds during fiscal year 1972. For the Microbiology Laboratory Bureau and the Highway alcohol program, expenditures amounted to \$305,866. For Sections I, II and IV in the Chemistry Laboratory Bureau, an estimate had to be made because there wasn't such a thing as a budget for this bureau. This was done according to a formula of 75 percent for personnel costs and 25 percent for services and supplies. The result came out to \$40,000. The figure of \$345,866 represents a per-capita expenditure of \$0.487 in the Public Health Laboratory (latest population estimate = 710,000).

My original budget request for the Laboratory Division for the next biennium was \$916,320; \$421,320 for the Chemistry Laboratory Bureau and \$495,000 for the Microbiology Laboratory Bureau. However, this was way beyond Governor Forrest H. Anderson's "hold-the-line" budget message. The final figure submitted to the Budget Director for the division was \$547,120; a cut of \$369,200. The main item which had to be deleted was services for Consumer Protection. Some of this will be made up via Federal contracts - we hope! Revenue Sharing may be another source of funds - from the Washington Report on the Medical Sciences, "House and Senate conferees agreed to include health as one of the categories for which the States can use revenue-sharing funds".

PROGRAM COST SUMMARY FOR 1972 AND ANTICIPATED REVENUE FOR FISCAL YEAR 1973

The elements entering into cost of laboratory tests are:

1. A uniform specimen handling fee which includes postage, mailing containers, clerical service, office overhead and amortization of office equipment. The present cost of handling a specimen is \$0.50.
2. Cost of technical time. This is commonly referred to as "shop-cost" and is figured currently at \$6.00 an hour. It includes overhead amortization on instruments, personnel benefits including annual leave, sick leave, and military leave; and a charge for expendable supplies. The final figure is based on a time-equivalent for the particular procedure.
3. Extraordinary costs associated with a specific procedure. An example of this would be the \$2.25 cost of an SM-7 Sobermeter for collecting a breath sample in the field to be submitted to the laboratory for alcohol analysis.

The Laboratory Division occupies 14,586 square feet of space in the W. F. Cogswell Building. At a "rental" charge of \$3.00/sq. ft./ year, this amounts to an annual rental equivalent of \$43,758.

Program	Cost in the Laboratory, F.Y. 1972	Amount budgeted directly to the laboratory	Balance
Chemistry Laboratory Bureau			
Air Quality Control	- no specific budget and no experience)	Cost	
Water Quality control	- no specific budget and no experience)	estimated	
Consumer services	- no specific budget and no experience)	at \$40,000	
Highway Alcohol Program	\$76,835	\$76,835	0
Microbiology Laboratory Bureau			
Disease Control Microbiology			
Determinative bacteriology	31,344 - Section I		
Mycobacteriology	19,303		
Mycology	872		
Parasitology	918		
Virology	37,383		
Venereal Disease Control	45,514		
Non-VD serology	1,104		
Total cholesterol	2,587		
	\$139,025	\$85,002	minus \$54,023
Maternal and Child Health (PKU)	12,879	8,898	minus 3,981
Cost of rubella HAI, serological tests for syphilis, and cultures for gonorrhoea for family planning and prenatal serology are included above under virology and VD control.			
Environmental Health	51,052	39,992	minus 11,060
Health Care Facilities	26,075	26,075	0
Totals for			
Microbiology Laboratory Bureau	\$229,031	\$159,967	minus \$69,064*

* This apparent deficit is made up from special grant funds as indicated in the summary on the first page.

LABORATORY DIVISION - BUDGETED INCOME FOR FISCAL YEAR 1973

Program and laboratory project identification number	Total	Source		
		State General Fund	Federal	
			CHG (314 d)	Other
0370 - Community Disease Control	\$78,188	\$29,234	\$48,954	-
0470 - Health Services	27,577	14,420	3,000	8,627 MCH 1,530 Other
0670 - Environmental Health	52,865	19,435	33,430	-
0570 - Health Care Facilities	39,680	23,379	12,755	3,546
0571 - Highway Alcohol Determinations	40,354	-	-	40,354 Contract Dept. of Trans.
TOTALS	\$238,664 (100%)	\$86,468 (36%)	\$98,139	\$54,057
		TOTAL FEDERAL	\$152,196 (64%)	

Fees charged for services of the Laboratory Division

The public health laboratory system is the measurement arm of departments of health and environmental sciences. Therefore, to charge a fee on a per-specimen basis would reduce the number of samples submitted and hence reduce the effectiveness of departmental programs. This would be especially true in the case of services for the diagnosis of diseases of public health significance. For over a hundred years the American Public Health movement has relied on appropriations, contracts and grants to carry on its work in the interest of the people of this nation. To charge a fee for a service which is of more benefit to society than to the individual is to move backwards over a hundred years.

For various reasons, some income has been generated in the laboratory. Here is a listing of charges made and income derived from them:

Testing of private water supplies - bacteriological analysis	= \$2.00
Bacteriological, MPN	= \$10.00
Minimum chemical analysis	= \$5.00
Special chemical analysis	= \$10.00
Collected in F.Y. 1971	= \$4,434.25

Testing of public water supplies under
contract with municipalities

Collected in F.Y. 1971	= \$14,442.09
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TOTAL	\$28,876.34
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This money is deposited in the State General Fund

Determination of alcohol content in human blood or urine	= \$5.00
---	----------

Collected in F.Y. 1971	
from Highway Patrol	= \$3,845
individually	= 155

TOTAL	\$4,000
-------	---------

This money is deposited to the credit of the Department

Respectfully submitted,



David B. Lackman, Ph.D., Administrator
Laboratory Division
State Department of Health and Environmental
Sciences



ANNUAL REPORT OF
THE LABORATORY DIVISION OF THE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES
TO THE GOVERNOR OF MONTANA
HONORABLE FORREST H. ANDERSON

FOR THE FISCAL YEAR ENDED JUNE 30, 1972

S U M M A R Y

	Number of tests performed	Cost of Program to laboratory
<u>Chemistry Laboratory Bureau</u>		
Air, Quality Control	12,924	*
Water Quality Control	3,261	*
Highway Alcohol Program	2,133	\$76,835 **
<p>* The Chemistry Laboratory was not incorporated into the division until reorganization of the department on November 29, 1971, and there wasn't such a thing as a chemistry laboratory budget. I cannot figure costs until at least a year's experience</p> <p>** This includes first-year costs for capital equipment such as 15 Alco-Analyzers, Sobermeters, a Varian 2800 Gas Chromatograph, etc.</p>		
<u>Microbiology Laboratory Bureau</u>		
Disease Control	64,798	\$130,233 (85,002)
Maternal and Child Health (PKU and pre-natal rubella HAI)	16,670	21,671 (8,898)
Environmental Health	15,347	51,052 (39,992)
Health Care Facilities (Laboratory Improvement, Surveys, etc.)	No Specific Tests	26,075 (26,075)
		<u>\$229,031 (159,967)</u>

() = Funds budgeted directly to the bureau. Costs of operating the bureau exceeded these funds by \$69,064. This was made up by paying personnel working in the laboratory from grants to other divisions. Other divisions also purchased laboratory supplies for their special projects.



Laboratory Division

Statutory Authority

Sec. 69-4110.10, RCM 1947

With policy guidance of the state board, the department shall:

- (8) organize laboratory services and provide equipment and personnel for these services.

Sec. 32-2142.3, RCM 1947 ("Implied Consent")

- (f) The Montana highway patrol board in cooperation with the state board of health or any other appropriate agency, shall adopt uniform standards for the giving of blood alcohol tests and may require certification of training to administer such tests as deemed necessary.

Principal Goals

Reorganization enabled us to achieve a most important goal; the establishment of a coordinated Laboratory Division in the department with a microbiology laboratory bureau and a chemistry laboratory bureau. This has resulted in increased production and efficiency. The Reorganization Act of 1971 and the adoption of a new Constitution in 1972 will be recorded as outstanding achievements of the twentieth century in Montana. Credit belongs to the people and their responsible, progressive leaders.

Primarily the laboratory performs service for programs of other divisions and provides consultation for their development. They are listed under program descriptions and accomplishments. However, we in the laboratory do have goals and objectives to guide us as we go about our task of providing service; here they are:

1. To function as a reference laboratory for difficult and unusual procedures and for those which would be inordinately expensive if not performed in large volume.
2. To perform direct services required by law or Board regulations.
3. To provide laboratory services for special studies and programs of other divisions and bureaus in the department.
4. To work for improvement in the performance of other laboratories in the state.
5. To improve the quality and relevance of our own services.

The methods by which we try to carry out these objectives are described in the State Plan for 1973.



Program description and accomplishments in the laboratory

CHEMISTRY LABORATORY BUREAU

Air Quality Control - 6,000 specimens subjected to 12,924 examinations. These included analyses for lead, particulates, benzene solubles (mainly hydrocarbons), fluorides, sulfur dioxide, oxides of nitrogen, arsenic, cadmium, zinc, copper and mercury.

Water Quality Control - 3,261 examinations performed on 2,476 specimens. The range of analytical procedures used include tests for total solids, hardness, iron, zinc, arsenic, lead, copper, selenium, odor, turbidity, pH, calcium, magnesium, sodium, potassium, carbonate, sulfate, chloride, nitrate, fluoride, phosphate, biological oxygen demand, consumed oxygen, phenols, detergents, pesticides and hydrocarbons.

Consumer services - 28 food samples and 5 miscellaneous products were examined. This service is practically non-existent and we hope to do something about it if money is made available.

Also in this category we performed 1,437 total cholesterol levels on blood specimens from heart disease screening clinics which were instituted under the Community Disease Control Program.

Highway Alcohol Program - analysis of specimens from humans for alcohol content were as follows: Breath shipped to our laboratory on Sobermeters = 427 (402); Breath done by law-enforcement officers in police stations on Alco-Analyzers = 585 (567); Blood shipped to our laboratory = 759 (560); Urine shipped to our laboratory = 362 (344). The numbers in parentheses are those having a value equal to or greater than 0.10%. The implementation of the laboratory aspects of "Implied Consent" under contract with the Department of Transportation through the State Highway Safety Division represents an outstanding achievement in the Laboratory Division in 1972.

The goal of the program is to remove drunken drivers from the highways of Montana and our objective is to fully carry out responsibilities delegated to us by Board Regulation 60.002 (QUALITY CONTROL OF ALCOHOL ANALYSES).

MICROBIOLOGY LABORATORY BUREAU

Disease Control Microbiology - The objective of this program is to provide laboratory services required for the prevention and control of diseases of man in Montana within limits stated by our general goals.

Determinative bacteriology - 7,084 tests (for a complete breakdown by species see narrative report)

Mycobacteriology (tuberculosis and related diseases) - 10,422 tests

Mycology - 1,843 tests

Parasitology - 179 tests

Virology - 16,365 tests (includes all German measles tests)

Venereal Disease Control - 41,058 tests (includes all cultures for gonorrhoea)

Non-VD serology - 356 tests



Maternal and Child Health - 9,899 Guthrie tests for phenylketonuria in newborns - (Section 69-4116, R.C.M. 1947).

Environmental Health - 15,347 tests. These include bacteriological tests on public and private drinking water supplies to determine potability and the analysis of a few specimens of food suspected of being a cause of human illness.

Health Care Facilities - Our responsibility for this program is to cooperate with the Administrator of the Hospital and Medical Facilities Division to help him in achieving his third objective: "To survey laboratories, whether hospital based or independent, and to provide consultation to improve the quality of facilities and technical manpower." All activities in continuing education come under this program and are carried out in cooperation with the Montana Medical Education and Research Foundation. Course No. 7, Bench Training in Microbiology, is given on a continuing basis in our laboratory. We also had the major responsibility this year for course No. 3, Ecological Microbiology for Hospitals. The Laboratory Advisory Council is sponsored by this program and a directory of members is attached. Proficiency testing which we provide in bacteriology and syphilis serology are also part of the laboratory improvement program. When a laboratory offers a state-approved external quality control program to satisfy medicare and medicaid requirements, a copy of their results is sent to our laboratory surveyor for review.

An important aspect of laboratory improvement is the enactment of legislation to protect the consumer from work of poor quality. At each session of the legislature we have a bill introduced to accomplish this. The current bill is entitled: "An Act to Regulate and License Clinical Laboratory Facilities and Personnel".

PROGRAM COST SUMMARY AND ANTICIPATED REVENUE FOR FISCAL YEAR 1973

The elements entering into the costs of laboratory tests are:

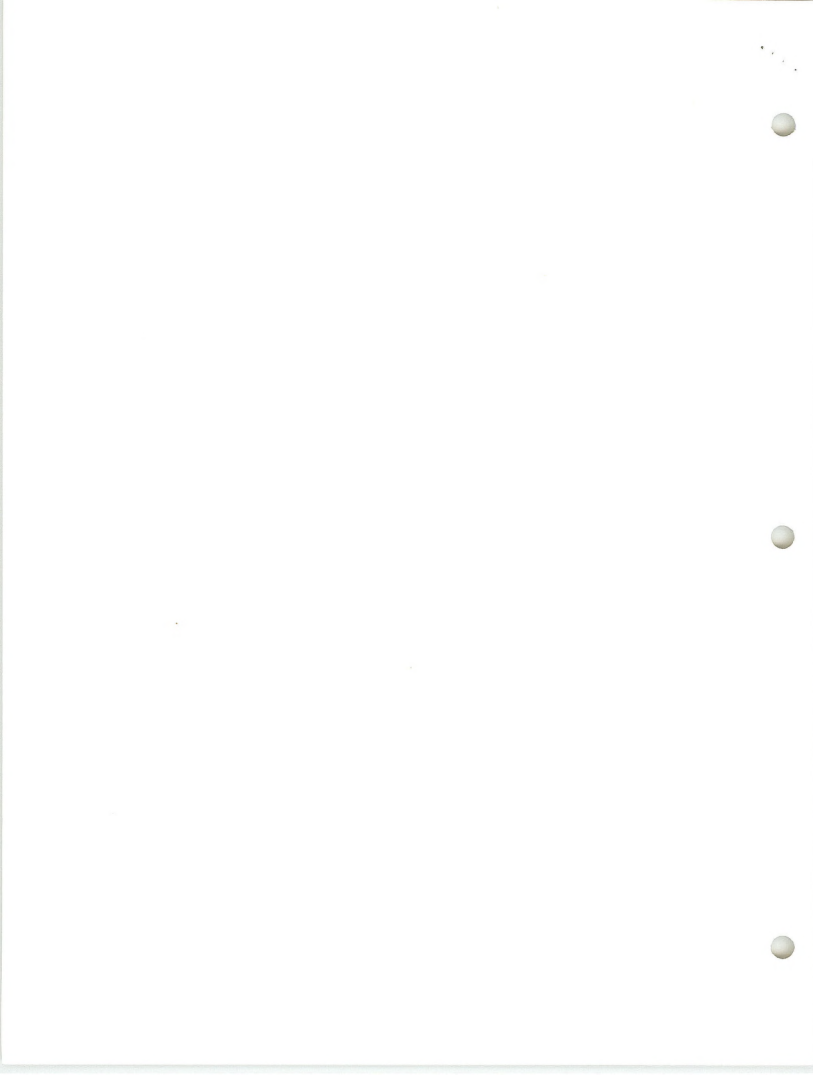
1. A uniform specimen handling fee which includes postage, mailing containers, clerical service, office overhead and amortization of office equipment. The present cost of handling a specimen is \$0.50.
2. Cost of technical time. This is commonly referred to as "shop-cost" and is figured at \$6.00 an hour. It includes overhead, amortization on instruments, personnel benefits including annual leave and sick leave, and a charge for expendable supplies.
3. Extraordinary costs associated with a specific procedure. An example of this would be the \$2.25 cost of an SM-7 Sobermeter for collecting a breath sample in the field to be submitted to the laboratory for alcohol analysis.

The Laboratory Division occupies 14,586 square feet of space in the W. F. Cogswell Building. At a "rental" charge of \$3.00/sq. ft./year, this amounts to an annual rental equivalent of \$43,758.



Program	Cost in the Laboratory, F.Y. 1972	Amount budgeted directly to the laboratory	Balance
Chemistry Laboratory Bureau			
Air Quality Control - no specific budget and no experience			
Water Quality Control - no specific budget and no experience			
Consumer services - no specific budget and no experience			
Highway Alcohol Program	\$76,835.	\$76,835.	0
Microbiology Laboratory Bureau			
Disease Control Microbiology			
Determinative bacteriology	31,344.		
Mycobacteriology	19,303.		
Mycology	872.		
Parasitology	918.		
Virology	37,383.		
Venereal Disease Control	45,514.		
Non-VD serology	1,104.		
Total cholesterol	2,587.		
	\$139,025.	\$85,002.	minus \$54,023.
Maternal and Child Health (PKU)	12,879	8,898.	minus 3,981.
Cost of rubella HAI, serological tests for syphilis, and cultures for gonorrhoea for family planning and prenatal serology are included above under virology and VD control.			
Environmental Health	51,052.	39,992.	minus 11,060.
Health Care Facilities	26,075.	26,075	0
Microbiology Laboratory Bureau Totals	\$229,031.	\$159,967.	minus \$69,064.*

* This apparent deficit is made up from special grant funds as indicated in the summary on the first page.

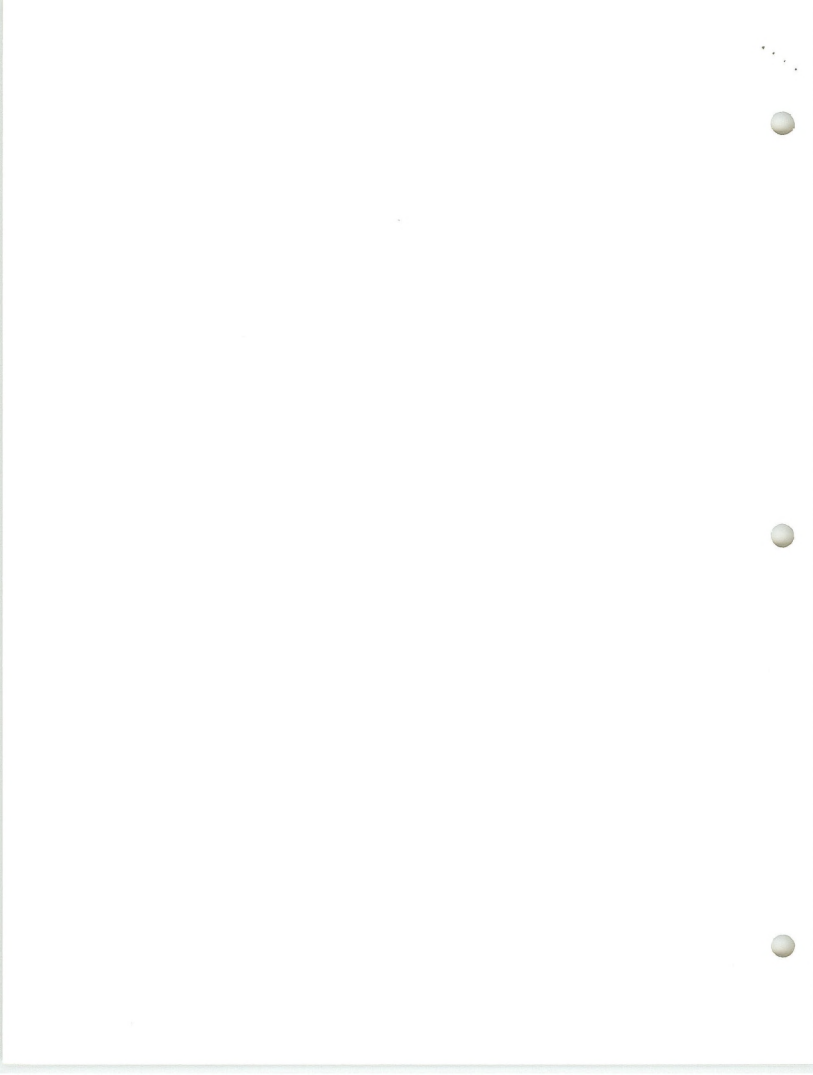


LABORATORY DIVISION - BUDGETED INCOME FOR FISCAL YEAR 1973

Program and laboratory project identification number	Total		Source	
		State General Fund	Federal	
			CHG (314 d)	Other
0370 - Community Disease Control	\$78,188.	\$29,234	\$48,954.	-
0470 - Health Services	27,577.	14,420.	3,000.	8,627 -MCH 1,530 -Other
0670 - Environmental Health	52,365.	19,435.	33,430.	-
0570 - Health Care Facilities	39,680.	23,379.	12,755.	3,546.
0571 - Highway Alcohol Determinations	40,354.	-	-	40,354 -Contract Dept. of Trans.
TOTALS	\$238,664. (100%)	\$86,468. (36%)	\$98,139.	\$54,057
TOTAL FEDERAL			\$152,196. (64%)	

Fees charged for services of the Laboratory Division

The public health laboratory system is the measurement arm of departments of health and environmental sciences. Therefore, to charge a fee on a per-specimen basis would reduce the number of samples submitted and hence reduce the effectiveness of departmental programs. This would be especially true in the case of services for the diagnosis of diseases of public health significance. For over a hundred years the American Public Health movement has relied on appropriations, contracts and grants to carry on its work in the interest of the people of this nation. To charge a fee for a service which is of more benefit to society than to the individual is to move backwards over a hundred years.



For various reasons, some income has been generated in the laboratory. Here is a listing of charges made and income derived from them:

Testing of private water supplies - bacteriological analysis = \$2.00;
bacteriological, MPN = \$10.00; minimum chemical analysis = \$5.00; special
chemical analysis = \$10.00.

Collected in F.Y. 1971 = \$4,434.25

Testing of public water supplies, under contract with municipalities

Collected in F.Y. 1971 = \$14,442.09

TOTAL \$28,876.34
This money is deposited in the State General Fund

Determination of alcohol content in human blood or urine = \$5.00

Collected in F.Y. 1971
from Highway Patrol = \$3,845.00
individually = 155.00

TOTAL \$4,000.00
This money is deposited to the credit of the Department

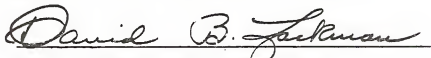
HERE IS A LISTING OF RECORDS OF ACTIVITY IN THE LABORATORY WHICH ARE COMPILED ANNUALLY:

1. "Combined Annual and Quadrennial Questionnaire" for the Association of State and Territorial Public Health Laboratory Directors. This contains the figures which are used as a basis for other reports. They are gathered from all States and Territories and are summarized and published by the Center for Disease Control. This is an invaluable document for state health officers and laboratory administrators.

2. The State Plan. This is required of all activities supported by federal funds from the Department of HEW.

3. Annual report to Governor Forrest H. Anderson.

4. The narrative report from the Laboratory Division. This ties together the other three documents and contains a complete listing of agents and diseases. It is most useful to professional persons, especially those engaged in disease control. A copy of this year's title page is attached.


David B. Lackman, Ph.D., Administrator
Laboratory Division



MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES
LABORATORY DIVISION COGSWELL LABORATORY BUILDING HELENA

May 18, 1972

Laboratory Advisory Council

NAME	REPRESENTATION	ADDRESS
William G. Walter, Ph.D., Chairman	Academic Institution - medical and biological sciences	Dept of Botany and Microbiology Montana State University Bozeman, Montana 59715
Noel Bowman, Professor	Academic Institution - physical sciences	Dept of Physics Carroll College Helena, Montana 59601
John P. Pfaff, Jr., M.D.	Pathologist	Columbus Hospital 1601 2nd Avenue North Great Falls, Montana 59401
E. C. Maronick, M.D.	Practicing Physician	1125 Missoula Avenue Helena, Montana 59601
Bridger P. Little, Jr., M.D.	Board of Health and Environmental Sciences Practicing Physician	Smith Clinic Box 951 Glasgow, Montana 59230
Francis W. Wright, M.T. (ASCP), Vice-chairman	Medical technologist	Montana Deaconess Hospital 1101 - 26th Street South Great Falls, Montana 59401
Sister Macrina, R.N.	Hospital Administrator	St. John's Hospital 25 South Ewing Helena, Montana 59601
Mrs. Shirley Miller	Consumer	417 South Fee, Apt. C Helena, Montana 59601

Non-voting, ex-officio members

George Fenner, Administrator	Hospital and Medical Facilities Division	State Department of Health and Environmental Sciences Helena, Montana 59601
David B. Lackman, Ph.D. Administrator	Laboratory Division	State Department of Health and Environmental Sciences Helena, Montana 59601



Laboratory Advisory Council

Non-voting, ex-officio members - Continued

Ben Wake, Administrator	Environmental Sciences Division	State Department of Health and Environmental Sciences Helena, Montana 59601
Richard Welch, M.D., Acting Administrator	Health Services Division	State Department of Health and Environmental Sciences Helena, Montana 59601
Mrs. Jean Lynch, Secretary	Hospital and Medical Facilities Division	State Department of Health and Environmental Sciences Helena, Montana 59601

The council shall exist until the first day of December 1973

Consultants

Howard L. Bodily, Ph.D.	Formerly Chief of Laboratory Division, California State Department of Health	P. O. Box 247 Midway, Utah 84049
Darrell Bingham, M.S., M.T. (ASCP)	Hospital and Medical Facilities Division	State Department of Health and Environmental Sciences Helena, Montana 59601
Judith Schuize, M.S., M.T. (ASCP)	Health Services Division (Laboratory)	State Department of Health and Environmental Sciences Helena, Montana 59601



MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES
LABORATORY DIVISION W. F. COGSWELL BUILDING
HELENA, MONTANA 59601

David B. Lackman, Ph.D., Administrator

September 20, 1972

PLAN FOR THE LABORATORY DIVISION FISCAL YEAR 1973
Programs Utilizing Federal Funds

(This fits into the overall State Plan as:

V. Laboratory Division

- A. Chemistry Laboratory Bureau
- B. Microbiology Laboratory Bureau)

OBJECTIVES

1. To serve the entire state as a reference laboratory for difficult and unusual procedures and for those which would be inordinately expensive if not performed in large volume.
2. To perform certain direct services and special studies which may be required by law or Board regulations.
3. To provide laboratory services required for the support of departmental programs.
4. To improve the performance of other laboratories in the state.
5. To improve the quality and relevance of our own services.

METHODS

To achieve our objectives, the functions of the laboratory division are reported as follows:

A. Chemistry Laboratory Bureau

- Section I Air Quality Control
- Section II Water Quality Control
- Section III Highway Alcohol Program
- Section IV Consumer Protection

B. Microbiology Laboratory Bureau

- Section I Bacteriology
- Section II Virology
- Section III Heart Disease Prevention



Section IV	Venereal Disease Control
Section V	Special Microbiology
Section VI	Maternal and Child Health (PKU)
Section VII	Environmental Microbiology
Section VIII	Financial
Section IX	Diagnostic testing for Indian Health Service, Billings Area Office

Here are methods used to work towards realizing each objective:

Procedures carried out in the laboratory under the first three objectives are:

Chemistry Laboratory

Air Quality Control - analyses for lead, particulates, benzene solubles (mainly hydrocarbons), fluorides, sulfur dioxide, oxides of nitrogen, arsenic, cadmium, zinc, copper and mercury.

Water Quality Control - analyses for total solids, hardness, iron, arsenic, zinc, lead, copper, selenium, odor, turbidity, pH, calcium, magnesium, sodium, potassium, carbonate, bicarbonate, sulfate, chloride, nitrate, fluoride, phosphate, biological oxygen demand, consumed oxygen, phenols, detergents, pesticides and hydrocarbons.

Highway Alcohol Program - analysis of breath, blood, and urine for content of ethyl alcohol or other volatile substances such as isopropyl alcohol, methyl alcohol, acetone, and carbon monoxide. Screening of urine samples for the presence of dangerous drugs or narcotics.

Consumer protection - analysis of food for heavy metals and analyses for identification of marijuana and pesticides. Determination of total cholesterol in blood for multiphasic screening clinics.

Microbiology Laboratory

Tests are performed in virology for aseptic meningitis due to enteroviruses (Coxsackie and ECHO), for pneumonia caused by Mycoplasma pneumoniae, for acute upper respiratory disease due to adenoviruses, for pleurodynia due to infection with Group B Coxsackie viruses, and for Colorado tick fever, encephalitis (Western and St. Louis), Herpes simplex, infectious mononucleosis (EB virus), influenza (type A and B), rubella (hard measles), rubella (German measles), post-infectious encephalitis due to mumps virus, poliomyelitis, Q fever, Rocky Mountain spotted fever and typhus fever. By referral to the Rocky Mountain Laboratory or the Center for Disease Control tests are available for cytomegalic inclusion disease, hepatitis-B (serum hepatitis), lymphogranuloma venereum, psittacosis, lymphocytic choriomeningitis, Powassan virus, and rabies (post-vaccination antibody titers).

We offer a complete range of public health microbiology services including mycobacteriology, mycology, parasitology, venereal disease serology and bacteriology, bacteriological analysis of water to determine suitability for human consumption, throat cultures for streptococci as part of a rheumatic heart disease prevention program, and the best determinative bacteriology in the U.S.



For reaching objective number four, we provide a proficiency testing program for venereal disease serology to about 60 laboratories and a proficiency testing program in bacteriology to about 75 laboratories in the State. The Laboratory Surveyor in the Hospital and Medical Facilities Division comes under professional supervision of the Administrator of the Laboratory Division. Through the work of the Surveyor, we coordinate our short-term training activities for clinical laboratory personnel with the Mountain States Regional Medical Program - Montana Division. One member of the Community Disease Control staff assigned to the laboratory provides consultation throughout the laboratory improvement program because she is a medical technologist of wide experience.

Another important effort to improve the quality of medical and public health laboratory work in Montana is the bill for an act entitled: "AN ACT TO REGULATE AND LICENSE CLINICAL LABORATORY FACILITIES AND PERSONNEL". This bill is revised and reintroduced at each legislative session. Each time the Center for Disease Control considers the Montana bill a model for other states to follow although it has been defeated twice. Denver (Region VIII) also seems to be pleased with our continuing efforts to secure this legislation. We have a Laboratory Advisory Council and one of its chief responsibilities is to advise the department on means of protecting the consumer from laboratory work of inferior quality.

The fifth objective, improving the quality and relevance of our own services, is with us daily. We participate in thirteen external quality control programs (proficiency tests). In the case of bacteriology we serve as one of two reference laboratories for the Center for Disease Control and as a referee laboratory for the Utah State Department of Health. It isn't always possible to exercise a free hand when it comes to relevance because we are "locked in" to some procedures by statute. However, we don't hesitate to discontinue services when there is insufficient demand or when a program is terminated. Determination of antistreptolysin "O" titers has been discontinued. Our budget provides for one person to attend a CDC or Environmental Protection Agency refresher course each year and we try to get other funds for travel for attendance at professional meetings and seminars.

EVALUATION

About the only method of direct evaluation is the annual narrative report of the laboratory division. A copy will be supplied to everyone using the state plan as soon as the statistical and narrative reports are put together. Failures most often are due to lack of money and this in turn may be due to lack of initiative on the part of the scientist in providing support for his program.

The scores on proficiency tests have been among the highest in the country. Particularly noteworthy have been the perfect scores (100) consistently received in virology. According to Utah, the reference work of our determinative bacteriology exceeds that of the Center for Disease Control in quality. Except for our highway safety unit, the chemistry laboratory bureau does not participate in any external quality control program. This will be investigated and corrected where possible.

unit



The narrative contains some figures for the amount spent in various sub-programs for laboratory work. Money spent isn't always a measure of the effectiveness of a program but when you have a staff composed of the best persons available and a reasonably efficient organization, dollars do spell accomplishment. Here are some costs for fiscal year 1972.

<u>Activity</u>	<u>Amount spent in the Laboratory</u> <u>Division F.Y. 1972</u>
Highway Alcohol Program	\$76,835
Reference diagnostic tests for the Indian Health Service ¹	19,258
Rubella Hemagglutination-Inhibition tests ²	16,074
Venereal Disease Control ²	45,514 ³
Virology Laboratory operation ⁴	37,383
Screening for phenylketonuria in newborns	12,869

These figures should not be totaled because there is some overlapping in services.

Notes: 1. In the critique for the last state plan, Dr. Kokko suggested that the services provided to the Indian Health Service should be written up as a separate section.

2. Includes tests for Family Planning Clinics (Culture for GC, VDRL for syphilis, and Rubella HAI)

3. Approximately \$8,000 of this was spent on culturing for Neisseria gonorrhoea. This will be twice as much in F. Y. 1973.

4. This includes the Rubella program. HAI tests are done on all clients of family planning clinics, all prenatal serum specimens, and all premaritals as well as clinical specimens sent in to determine level of antibodies. We are performing these tests at the rate of about 2,000 a month and average about 5.7 percent non-immunes.



THE PAGE NUMBERS WHICH ARE MISSING ARE PAGES OF INSTRUCTIONS OR THOSE ON WHICH WE MADE NO ENTRIES.

ASSOCIATION OF STATE AND TERRITORIAL
PUBLIC HEALTH LABORATORY DIRECTORS

COMBINED
ANNUAL AND QUADRENNIAL
QUESTIONNAIRE

(FY 1972)

Fiscal Year: July 1 1971 to June 30 1972.

State of: MONTANA

Laboratory ~~Director~~ ^{Administrator} DAVID B. LACKMAN, Ph.D.

Date Report Submitted: September 27, 1972

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THIS DOCUMENT CONTAINS MOST OF THE FIGURES WHICH FORM THE BASIS FOR OTHER REPORTS FROM THE LABORATORY DIVISION: SEE PAGE X 67.



Miscellaneous bacteriology includes all smears and cultures not included in a specific category above. The laboratory should prepare a supplemental report covering the general bacteriology activities and listing the various organisms which have been studied by this section.

SPECIMENS	TYPE OF TEST	EXAMINATIONS	POSITIVES
<u>1902</u>	THROAT CULTURES	<u>2502</u>	
	* <u>Corynebacterium diphtheriae</u> (18)		<u>0</u>
	Streptococcus, beta hemolytic (2482)		<u>339</u>
	Group A		<u>2</u>
	Staphylococcus		
<u>0</u>	VINCENT'S ANGINA	<u>0</u>	<u>0</u>
<u>2445</u>	MYCOBACTERIUM	<u>10,422</u>	
	Mycobacterium tuberculosis		<u>138</u>
	Mycobacterium, atypical		<u>34</u>
<u>574</u>	ENTERIC CULTURE	<u>2634</u>	
	Salmonella		<u>62</u>
	Shigella		<u>39</u>
	Enteropathogenic <u>E. coli</u>		<u>2</u>
	Other		<u>38</u>
			(131)
<u>101</u>	ENTERIC SEROGROUPING	<u>101</u>	
<u>39</u>	ENTERIC SEROTYPING	<u>39</u>	
<u>10</u>	BACTERIOPHAGE TYPING		
	Staphylococcus	<u>10 (Referred to CDC)</u>	
	Salmonella		
	Other		
<u>21</u>	BLOOD CULTURES	<u>21</u>	
	Gram negative bacteria		<u>1</u>
	Bruceila		
	Other		<u>12</u>
<u>27</u>	SPINAL FLUID CULTURES	<u>27</u>	
	Meningococcus		<u>3</u>
	Other		<u>20</u>

* All cultures for C. diphtheriae also examined for hemolytic streptococci.



SPECIMENS	TYPE OF TEST	EXAMINATIONS	POSITIVES
<u>192</u>	WOUNDS AND BODY FLUIDS	<u>192</u>	
	Staphylococcus		<u>18</u>
	Anaerobes		<u>87</u>
	Other		<u>119</u>
<u>3</u>	DENTAL CARIES CULTURES	<u>3</u>	
<u>81</u>	URINE CULTURES	<u>81</u>	<u>73</u>
<u>95</u>	ANAEROBIC CULTURES	<u>95</u>	<u>87</u>
<u>397</u>	GENITAL SMEARS	<u>397</u>	
	Trichomonas		<u>74</u>
	Gram negative Diplococcus		
	Yeast		
	Darkfield		
<u>1,472</u>	NEISSERIA GONORRHOEAE CULTURES	<u>1,656</u>	<u>92</u>
<u>344</u>	REFERRED CULTURES	<u>344</u>	*
	ANTIBIOTIC SENSITIVITY		
<u>81</u>	Mycobacteria	<u>1,296</u>	
<u>36</u>	Other	<u>36</u>	
<u>648</u>	MISCELLANEOUS	<u>648</u>	*

*List organisms isolated and studied.

See Annual report of the Microbiology Laboratory Bureau "BUGS IN THE BIG SKY COUNTRY - from Aeromonas to Xanthomonas in Montana"

(Narrative report will follow.)



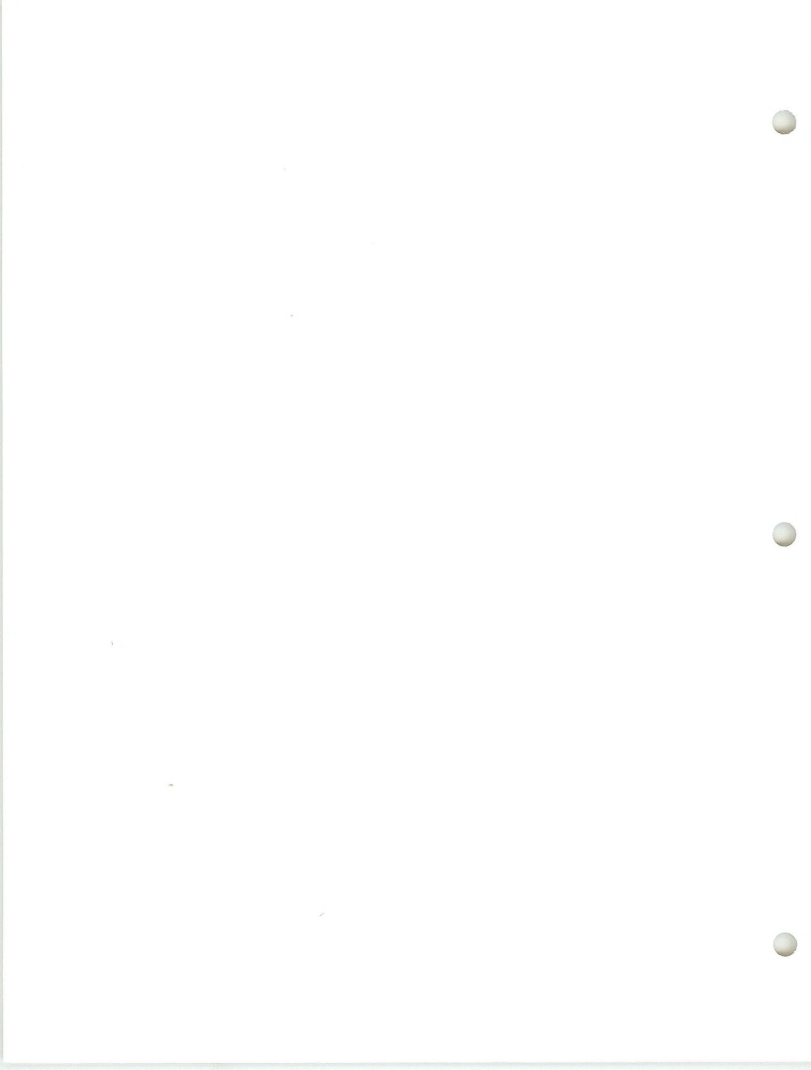
2

MYCOLOGY

Definition:

Myology cultures - Regardless of the source of specimen count the positives opposite the organism isolated.

<u>SPECIMENS</u>	<u>TYPE OF TEST</u>	<u>EXAMINATIONS</u>	<u>POSITIVES</u>
<u>153</u>	MYCOLOGY CULTURES	<u>1843</u>	
	Dermatophytes		<u>3</u>
	Microsporium		<u>13</u>
	Trichophyton		<u>1</u>
	Sporotrichum		<u>0</u>
	Others		
	Systemic Fungi		
	Histoplasma		<u>0</u>
	Cryptococcus		<u>1</u>
	Blastomyces		<u>0</u>
	Coccidioides		<u>2</u>
	Other		<u>38</u>
<u>12</u>	REFERRED FOR IDENTIFICATION	<u>76</u>	



PARASITOLOGY

Definition:

Parasitology specimens should include all helminths (Ascaris, hookworm, Trichinella, etc.), as well as protozoa and arthropods.

<u>SPECIMENS</u>	<u>TYPE OF TEST</u>	<u>EXAMINATIONS</u>	<u>POSITIVES</u>
<u>161</u>	PARASITES	<u>161</u>	
	Protozoa		<u>33</u>
	Helminths		<u>29</u>
<u>9</u>	BLOOD PARASITES, MICROSCOPIC	<u>18</u>	<u>5</u>
<u>6</u>	REFERRED SPECIMENS		
	Arthropods	<u>0</u>	
	Malaria	<u>10</u>	
	Other protozoa	<u>1</u>	
	Helminths & other worms	<u>1</u>	



VIROLOGY

SPECIMENS	TYPE OF TEST	EXAMINATIONS	POSITIVES *
--	RABIES **		
	Microscopic		
	Animal Inoculation		
	VIRAL ISOLATIONS		
	Human Source		
69	Throat Washings	69	15
72	Fecal	72	3
39	CSF	78	0
26	Blood	26	7
	Tissue		
3	Other	5	1
	Animal Source		
	Horses at Rocky Mountain Laboratory		
	Birds Done at Rocky Mountain Laboratory in Hamilton		
	Mosquito Pools (1 Pool = 1 specimen)	"	
	Other		
	Other Source		

* Listing of viral isolates

Virus	Source
Herpes simplex	Skin scraping
Herpes simplex	Throat swab
Colorado Tick Fever (X7)	Blood clot into "L" cells
ECHO 9 (X2)	Throat Swab
ECHO 9 (X2)	Rectal Swab
	(More ECHO 9 isolates since July 1. Also ECHO 6 and others. Aseptic meningitis prevalent in the state.)
Polio Type I (wild strain)	Stool
Influenza A (Hongkong) (X12)	Throat Swab

** Rabies diagnostic work is done at the Livestock Sanitary Board Laboratory in Bozeman and at the PHS Rocky Mountain Laboratory in Hamilton.



SYPHILIS SEROLOGY

Definitions:

Serology examination will be considered as the testing of one serum with one antigen. This may be a one-tube qualitative test or may involve serial dilutions. Each individual tube of a series of dilutions will not be counted as a separate examination. Serology with various antigens will include only the testing for antibodies in the patient's serum. Use of serologic techniques for the identification of an isolated organism will be reported in the respective section of the report.

Syphilis, Blood, Screening - the number entered will be that number closest to the total number of bloods examined for syphilis. Under Quantitative and Confirmatory enter all the tests done even though the specimens were included in the Screening total.

<u>SPECIMENS</u>	<u>TYPE OF TEST</u>	<u>EXAMINATIONS</u>	<u>POSITIVES</u>
<u>SYPHILIS</u>			
<u>37,823</u>	Blood		
	Screening	<u>37,823</u>	<u>1608</u> *
	Quantitative	<u>2,009</u>	
(FTA-ABS)	Confirmatory (Treponemal)	<u>948</u>	<u>349</u> *
<u>287</u>	Spinal Fluid	<u>287</u>	<u>6</u> *

*Weakly reactive or above.

Prenatals - 5,617 done in State Lab. (38.1%)

Prenatals - 6,359 done in State Lab. (55.2%)

FTA-ABS - 948 examinations - 349 positive

Total cost of VD control in the laboratory (includes GC culture program also)

\$46,614.00



NON-SYPHILIS SEROLOGY

Definitions:

Bacterial and Miscellaneous serology positives should be defined by inserting immediately after the specific antigen the serum dilution you consider a positive examination. For example, H antigen 1:80. In those categories where minimum significant titer is requested indicate the level you record as significant for disease. Viral and Rickettsial serology positives - indicate your definition of these positives.

SPECIMENS	TYPE OF TEST	MINIMUM	EXAMS	POSITIVES*
		SIGNIFICANT TITER		
<u>229</u>	BACTERIAL			
	Typhoid & Paratyphoid			
	Brucellosis	<u>1:80</u>	<u>87</u>	<u>6</u> Includes CDC
	Tularemia	<u>1:80</u>	<u>86</u>	<u>5</u> Proficiency
	Weil-Felix			
	Antistreptolysin O **	<u>1:240</u>	<u>31</u>	<u>13</u>
	Leptospirosis Referred to Rocky Mountain Laboratory			<u>(20)</u>
	Other Bacterial Diseases			
	Streptozyme screening	<u>1:170</u>	<u>25</u>	<u>14</u>
<u>127</u>	MISCELLANEOUS SEROLOGY			
	(Ox-cell hemolysin) Infectious Mononucleosis	<u>1:40</u>	<u>127</u>	<u>30</u>
	Cold Agglutinin			
	C-Reactive Protein			
	Rheumatoid Factor			
	Other			
<u>81</u>	FUNGAL			
	Blastomycosis		<u>Referred</u>	<u>2</u>
	Coccidioidomycosis		<u>"</u>	<u>1</u>
	Histoplasmosis			
	Mycelial		<u>"</u>	<u>0</u>
	Yeast Phase		<u>"</u>	<u>7</u>
	Other		<u>"</u>	<u>0</u>
<u>53</u>	PARASITOLOGICAL			
	Trichinosis		<u>Referred</u>	<u>0</u>
	Toxoplasmosis		<u>"</u>	<u>6</u>
	Other		<u>"</u>	<u>0</u>

*Positives will indicate all reactions at or above the titer you have reported.

** We are investigating use of the Streptozyme test of Wampole Laboratories for screening purposes. (Have decided to discontinue ASO - any requests we get will be referred to Shodair Crippled Childrens Hospital.)



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SPECIMENS	TYPE OF TEST	EXAMS	POSITIVES
<u>17,291</u>	.. VIRAL AND RICKETTSIAL		
	Complement fixation		
	Mumps	81	24
	Respiratory	1011	102
	Influenza A	395	78
	Influenza B	205	0
	Arboviruses	214	3
	Enteroviruses	only	polio neut.
	Measles	92	2
	Other	381	21
	HI and/or HAdI		
	Rubella	13,903	13,217*
	Influenza A	182	83
	Influenza B	182	0
	Measles		
	Other		
	Neutralization	645	see summary
	FA		
	+Australia Antigen Referred to CDC - Phoenix station		

* 686 (5.7%) non-immunes.

pg. 12 = Hematology or Blood Bank -
omitted — None



Definition:

A Positive for chromosomal cytology will be a chromosomal aberration, either numerically or structurally.

<u>SPECIMENS</u>	<u>TYPE OF TEST</u>	<u>EXAMINATIONS</u>	<u>POSITIVES</u>
_____	CYTOLOGY, EXFOLIATIVE	_____	_____
_____	CYTOLOGY, CHROMOSOME	_____	_____
_____	TISSUE, HUMAN, MICRO	_____	
_____	TISSUE, ANIMAL, MICRO	_____	

I have made the recommendation that this service only be provided when there is a Board-certified Pathologist on the staff, or in the case of cytology, when a consulting pathologist is available to review the slides.

On our department salary schedule a pathologist would be about \$25,000 a year and we couldn't afford to pay that much for laboratory personnel.



CLINICAL CHEMISTRY

Definitions:

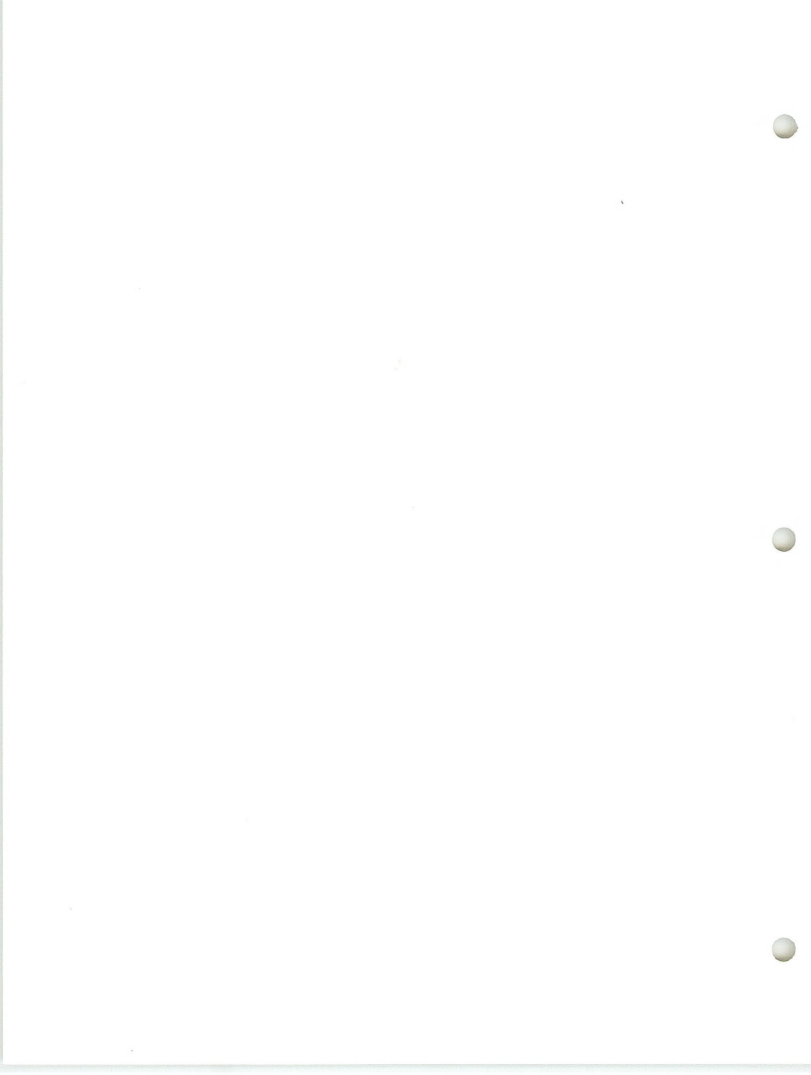
Urine - Include all analysis of urine except bacteriological.

Multiphasic Screening - Blood or urine samples taken from healthy individuals on which three or more tests are performed for detection of inapparent disease.

SPECIMENS	TYPE OF TEST	EXAMINATIONS	POSITIVES
<u>1437</u>	BLOOD		
	Glucose		
	Cholesterol	<u>1437</u>	
	Urea Nitrogen		
	Uric acid		
	Transaminase		
	Other		
	URINE		
	OTHER CLINICAL CHEMISTRY		
<u>9,899</u>	PKU (Guthrie)	<u>9,764</u>	<u>0</u> *
	+OTHER INBORN ERRORS		
	+MULTIPHASIC SCREENING		

*4 mg% or above.

See annual report for a more complete analysis (to follow).



SANITARY AND ENVIRONMENTAL MICROBIOLOGY*

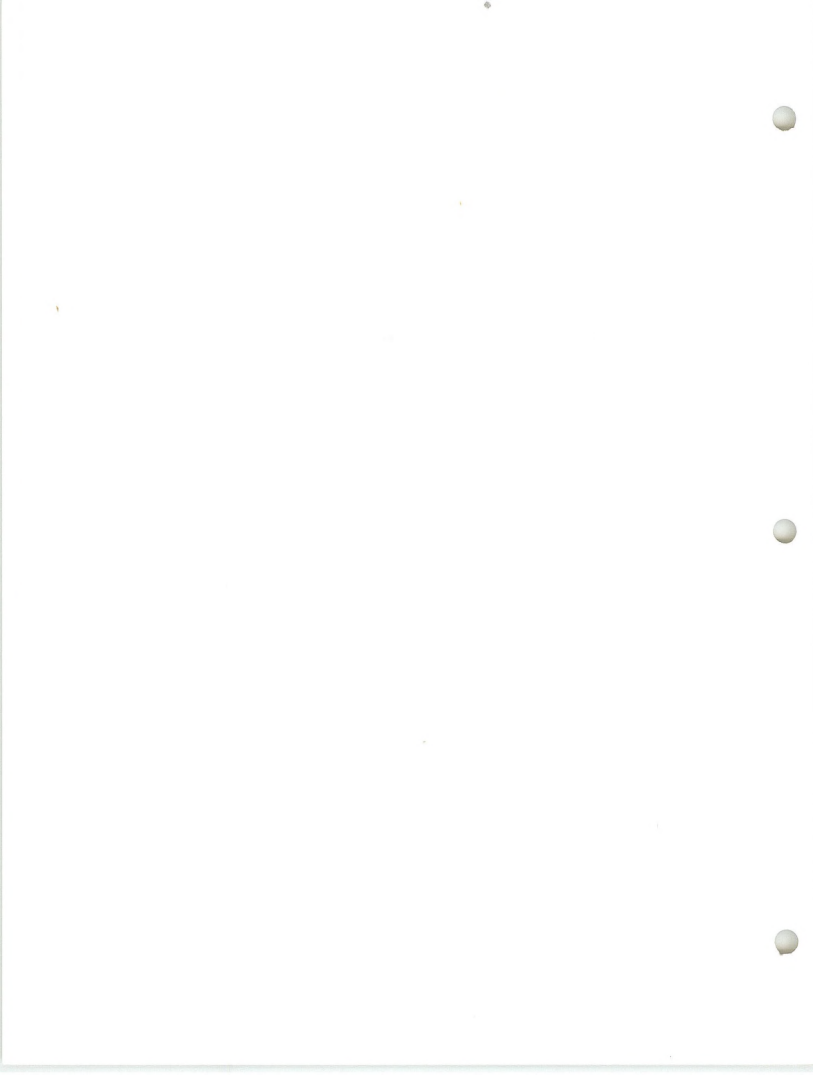
Definitions:

Drinking Water - Give total number of examinations performed on Drinking Water, including Standard Plate Counts.

Food-Associated Disease Outbreaks means testing of foods related to outbreaks of food-associated illness, either toxins or contaminants.

<u>SPECIMENS</u>	<u>TYPE OF TEST</u>	<u>EXAMINATIONS</u>	<u>POSITIVES</u>
<u>SANITARY MICROBIOLOGY</u>			
<u>12,139</u>	Drinking Water (Total Exams)	<u>14,404</u>	
	Standard Plate Count		
	(on finished water)		
	Coliforms		<u>1203</u>
	Iron Bacteria		
<u>307</u>	Source of Raw Water for Treatment	<u>614</u>	
<u>12</u>	Swimming Pools	<u>24</u>	
	Recreational Water		
<u>256</u>	Milk and Cream	<u>256</u>	
<u>49</u>	Frozen Desserts	<u>49</u>	
	Other Dairy Products		
	Food Quality		
	Food-Associated Disease Outbreaks		
	Shellfish		
	Beverages		
	Utensil Counts		
	Environmental (Rodac plates, air samples, surface swabs, etc.)		

*Related field activities involving laboratory personnel will be reported in Section VIII, Pg. 45.



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<u>SPECIMENS</u>	<u>TYPE OF TEST</u>	<u>EXAMINATIONS</u>	<u>POSITIVES</u>
_____	STREAM POLLUTION *	_____	
	Algae		_____
	Coliforms		_____
	Fecal Coliforms		_____

* Report on field work in Water Quality Bureau will be included
in narrative report to follow.



SANITARY AND ENVIRONMENTAL CHEMISTRY*

SPECIMENS	TYPE OF TEST	EXAMINATIONS
	SANITARY CHEMISTRY (WATER, MILK, AND FOOD)	
<u>2417</u>	Drinking Water	
	*Complete Analysis	<u>403</u>
	Partial Analysis	
	Nitrate	<u>442</u>
	Iron	<u>467</u>
	Fluorides	<u>618</u>
	Hardness	<u>408</u>
	Other	<u>85</u>
	Swimming Water	<u>0</u>
	Dairy Products	<u>0</u>
	Food	<u>28</u>
	Miscellaneous (List types of tests included)	<u>5</u>
<u>59</u>	WATER POLLUTION	
	Dissolved Oxygen	
	Phosphates	<u>28</u>
	BOD	
	COD	
	Detergents	
	Other	<u>783</u>
		(Zn, Cu, As, Pb, Hg)

*Related field activities involving laboratory personnel will be reported in Section VIII, Pg. 45.

* Our complete has 11 determinations in it:

Ca, Mg, Na, K, CO₃, HCO₃, SO₄, Cl, NO₃, F, OH.

AIR POLLUTION*

SPECIMENS	TYPE OF TEST	EXAMINATIONS
<u>6000</u>	AIR POLLUTION	<u>12,924</u>
	Discrete Sampling (Use Check Mark)	(✓)
	Continuous Sampling	(✓)
	No. of Stations *	<u>242</u>

*Related field activities involving laboratory personnel will be reported in Section VIII, Pg. 45.

* *This varies - a year's study is done and then the station is moved.*

Air pollution sampling and field testing is not the responsibility of the Laboratory Division. However, we are including figures obtained from the field activities of the Air Quality Bureau.

Table received from Air Quality Control Bureau will be included in the narrative report.



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OCCUPATIONAL HEALTH & SAFETY*

<u>SPECIMENS</u>	<u>TYPE OF TEST</u>	<u>EXAMINATIONS</u>
<u>OCCUPATIONAL HEALTH AND SAFETY</u>		
	Chemical Analyses	
	Human Source	_____
	Environmental Source	_____
	Biological Analyses	
	Human Source	_____
	Environmental Source	_____

*Related field activities involving laboratory personnel will be reported in Section VIII, Pg. 45.

This has been taken over by the Department of Labor and Industry under the Occupational Health and Safety Act.

Although the department still has an Occupational Health Bureau, its work is largely confined to radiological safety and the industrial hygienist is working on surveys for noise pollution.



RADIOACTIVITY

SPECIMENS	TYPE OF TEST	EXAMINATIONS
RADIOACTIVITY		
_____	Air	_____
_____	Milk	_____
_____	Water and Rainfall	_____
_____	Atomic Energy Plant Monitoring	_____
_____	Other	_____

This activity is the responsibility of Larry Lloyd, Chief, Occupational Health Bureau, Environmental Sciences Division. He is working intensively on radiological safety.

Examinations of air and water samples for radioactivity are referred to EPA in Durham, North Carolina and milk samples to the radiological laboratory in Las Vegas, Nevada.



PESTICIDES

Definition:

Pesticides related to industrial problems should be put under Occupational Health and Safety.

<u>SPECIMENS</u>	<u>TYPE OF TEST</u>	<u>EXAMINATIONS</u>
PESTICIDES		
_____	Milk	_____
_____	Water	_____
_____	Food	_____
_____	Human Source	_____
_____	Environmental Source	_____

We are not set up to do any pesticide analysis. The Bureau of Environmental Services has a project to study pesticide usage but not a penny for laboratory work. Years ago a Beckman GC 4 was purchased for pesticide studies but there was never money or time to put it into use. Perhaps '73 will be the year; we are working on it.



TOXICOLOGY, FORENSIC AND OTHER

Definitions:

Drug Analysis, Forensic includes all examinations of drugs submitted by Medical Examiners or law enforcement agencies. Include under Other any other type of analysis of drugs, e.g., identification of drugs, quality testing, etc. Drug residuals in food should be included under the Sanitary Chemistry section.

Tissues, Breath, Body Fluids, Lead - exclusive of those done for occupational health and sanitation. Any analyses for occupational health and safety on people would not be included in the Toxicology section. All other samples on humans done as part of environmental surveys should be included, such as surveys of lead in the inner city.

SPECIMENS	TYPE OF TEST	EXAMINATIONS
<u>4</u>	DRUG ANALYSIS	
	Forensic	
	Other	<u>4</u>
<u>2137</u>	TISSUES, BREATH, OR BODY FLUIDS	
	+Alcohol	
	Blood	<u>759</u>
	Breath	<u>7012</u> (585 in police stations
	Other (Urine)	<u>362</u> (and 427 in State Lab.)
	Barbiturates	<u>2</u>
	Lead	<u>2</u>
	Other Heavy Metals	
	Narcotics	
	Psychotropic Agents	
	Others	
(2133 analyses for alcohol compared to 775 in F.Y. 1971)		

* We are attempting to start a project to include drug analysis in our highway alcohol program during F.Y. 1973.



SPECIAL QUESTIONS ON DIAGNOSTIC WORKLOAD

1. Which methods do you use for Australia Antigen? What is the source of the reagents used?

*None - We send all diagnostic specimens to
Ken Berquist at CDC, Phoenix station.*

2. Are you involved in any multiphasic screening programs? Yes ☒ No ☐
If Yes, list Test, Sponsor, Type of Recipient, and Amount of Reimbursement, if any.

YES.

Heart Disease Screening Program.

*Community Disease Control Bureau of the Health Services
Division of the Department and the Montana Heart
Association.*

*Total cholesterol project provides reagents and supplies
for tests - about \$800.00 / year. Recipient - Rural
communities.*

3. What analytic methods are you using for determination of mercury?
For what purposes?

Flameless Atomic Absorption.

Air and water quality control.



- 20
4. Do you have a Drug Screening Program using Methadone? Yes _____ No X
If Yes, How many people are in the program and what is the frequency of the tests?

Number of people in program _____

Frequency of tests _____

5. What methods do you use to screen for metabolic disorders other than PKU?

We do not screen for other than PKU.

6. What fluorometric procedures do you use?

NONE

7. Do you have an Alcohol Program? Yes X No _____
If Yes, give a brief description.

Funded through Highway Safety Division from Department of Transportation.

We supply SM-7 Sobermeters to Law enforcement officers and analyze them in the State Lab.

Have set up 14 Alco-Analyzers in Police Departments.

We are responsible for Quality Control of whole program and training of officers in use of the equipment.

1972 Grant = \$76,835.

1973 Grant = \$40,354.



8. Do you have a Sickle Cell Detection Program? Yes _____ No X
If yes, give a brief description.

Black population in Montana would never justify this.



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II. PRODUCTION OF BIOLOGICS AND REAGENTS

DIAGNOSTIC REAGENTS	Amount <u>Produced</u> (Doses)	Amount Distributed
		to <u>Other Labs</u> (Doses)
Antisera-List	_____	_____
	_____	_____
	_____	_____
	_____	_____
	_____	_____
Antigens	_____	_____
	_____	_____
	_____	_____
	_____	_____
	_____	_____
Solutions	<i>Alcohol for use in Simulators</i>	<i>56 liters</i>
	_____	_____
	_____	_____
	_____	_____
	_____	_____

PRODUCTS FOR HUMAN USE

	<u>Amount</u> (Doses)
Typhoid vaccine	_____
Smallpox vaccine	_____
Pertussis vaccine	_____
Diphtheria toxoid	_____
Diphtheria-Tetanus-Pertussis	_____
Tetanus and Diphtheria toxoid, combined aluminum phosphate precipitated for adult use	_____
Tetanus toxoid	_____
Old Tuberculin	_____
Silver nitrate	_____
Flupride	_____
Other	_____
_____	_____
_____	_____
_____	_____
_____	_____



PERSONNEL
(Include Central and Branch Laboratories)

	Total No. of Budgeted Positions	New Positions Established in Last 12 Months	Positions Abolished	No. of Positions Filled*	Total No. of Employees Hired During Yr.	During Reporting Period	
						Resigna- tions	Separa- tions
1. Management	- - -						
2. Clerical	4			4	2	2	
3. Professional & Technical	11	1	1	11	2	1	
4. Supportive Services	6			6			
5. Maintenance	- - -						
TOTAL	21	1	1	21	4	3	- - -

Persons paid on other budgets but assigned to work in Laboratory:

1 - Microbiologist II
1 - Chemist II
1 - Medical Technologist I
1 - Laboratory & Field Technician II
2 - Work Study Students (Lab. Helper II)

*As of closing date of period covered by this report.

Chemistry Laboratory added November 29, 1971.



UTILIZATION OF PRESENT FACILITIES
(as of closing date of period covered by report)

<u>ITEM AND USE</u>	<u>Space Available and Personnel Assigned</u>				
	<u>Net Sq. Ft. in Central Laboratory</u>	<u>No. of Persons Assigned</u>	<u>Net Sq. Ft. in Branch Laboratories</u>	<u>No. of Persons Assigned</u>	<u>Total Sq. Ft. of Space</u>
A. Professional and Technical Space					
1. Diagnostic Bacteriology	2,200	4.7			
2. Sanitary Bacteriology	425	2.0			
3. Mycology		0.5			
4. Parasitology		0.3			
5. Virology		2.0			
6. Serology		2.0			
7. Hematology		0.0			
8. Pathology		0.0			
9. Clinical Chemistry		0.0			
10. San. Chem. (Water & Milk)	3,000 - and Air	2.0	plus several extra from Air Quality and Water Quality Bureaus		
11. Industrial Chem. & Toxicology	0	0.0			
12. Toxicology (Forensic)	0	0.0			
13. Research	0	0.5			
14. Other					
B. Support Services					
1. Glassware Preparation	650	1.0			
2. Media Preparation	200	1.0			

Chemistry Laboratory added November 29, 1971



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PERSONNEL WORKING IN THE VARIOUS PROGRAMS:

Estimate the percentage of the total number of personnel allocated to each of the laboratory programs:

<u>Program</u>	<u>Percent of Total Personnel*</u>
A. Analytical Services	<u>99.0 %</u>
B. Research and Development	<u>0.5 %</u>
C. Production of Biologics	<u>0 %</u>
D. Intrastate Laboratory Improvement	<u>0.5 %</u>
E. Other	<u>%</u>
TOTAL	<u>100 %</u>

CLASSIFICATION AND COMPENSATION:

Please send in a copy of any classification and pay plan that has changed since the information shown in the December 1971 publication of "Position Classification and Pay in State and Territorial Public Health Laboratories." If there have been no changes, please indicate by check mark:

 No Changes in Salaries or Position Descriptions

ENCLOSED. Compensation Plan April 1, 1972.

*As of closing date of period covered by this report.



UTILIZATION OF PRESENT FACILITIES

(as of closing date of period covered by report)
(Continued)

ITEM AND USE	Space Available and Personnel Assigned				
	Net Sq. Ft. in Central Laboratory	No. of Persons Assigned	Net Sq. Ft. in Branch Laboratories	No. of Persons Assigned	Total Sq. Ft. of Space
3. Supply Room & Container Storage	250				
4. Container Preparation	(see 6.)	0.0			
5. Animal Activities	200	0.5			
6. Mail Room	900	0.5			
7. Specimen Receiving	(see 6.)	0.0			
8. Bulk Storage	1500				
9. Other					
Totals	9,325	17			
C. Administrative Space					
1. Office Space	1500	4			
2. Conference Rooms	1200				
3. Library	400				
4. Other <u>Lab. Fish & Game</u>	800	4			
	1,361				
Total	5,261				

14,586 sq.ft. Total
x \$3.00 per sq.ft.

\$43,758 = annual cost of space
used for laboratory
activities.

1,361 - includes corridors and rest rooms because these
are used to calculate "rent" due to Department
of Administration.



SPACE DEVOTED TO THE VARIOUS PROGRAMS:

Estimate the percent of the total net square feet that is allotted to each of the following laboratory programs:

<u>Program</u>	<u>% of Total Net Square Feet in Central & Branch Laboratories</u>
1. Analytical Services	<u>99.0</u> %
2. Research and Development	<u>0.5</u> %
3. Production of Biologics	<u>- -</u> %
4. Intrastate Laboratory Improvement	<u>0.5</u> %
5. Other	<u> </u> %
TOTAL	<u>100</u> %

STATUS OF PLANNING FOR NEW LABORATORY FACILITIES:

1. Was the Laboratory's space increased or changed during FY 1972?
Yes X No *Addition of Chemistry Lab. to create a Laboratory Division*
If Yes, what was the net gain in space? 3,000
2. Year present laboratory was completed: 1958
3. Is planning for a new laboratory currently in progress?
Yes No X
4. Is planning of a new laboratory in FY 1974 anticipated?
Yes No X
5. The legislature has provided funds for planning (Yes No X) and construction (Yes No X).
6. Construction should begin by FY - -.
7. Estimated costs for construction of facilities are \$ X.
8. Has the architect been selected? Yes No X
9. Estimated gross square feet (outside building dimensions) to be constructed are - - square feet.



10. Estimated net space in the building: _____ square feet.
11. Is the laboratory to be a separate building? Yes _____ No _____
12. Will the planned building replace the present laboratory or be in addition to it? _____
13. If the new construction is an expansion to the existing laboratories, will substantial alterations be made to the existing building?
- Yes _____ No _____

V. INTRASTATE LABORATORY IMPROVEMENT, AND PROFICIENCY TESTING PROGRAMS UNDER MEDICARE

- A. Please indicate by check mark if your State has a:

- ☐ Laboratory Licensure Law
☐ Laboratory Personnel Licensure Law
☐ Laboratory Registration Law
- } NO

If any of the above is checked, please fill in Question B, p. 35.

If your State has a registration or licensure law, or if a bill has been introduced, please furnish a copy of the bill or law.

We have a "model" bill but it may not even be introduced.

Arnold Hicks and Marion Brooke have a copy of the latest

draft (September 14, 1972).

Page 35 - Deals in Lab. LAWs for
Licensure and Registration -
We have none.

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C. INTRASTATE EVALUATION OF LABORATORIES

Evaluation of laboratories for Licensure, Permit, Registration,
or Approval:

1. Please indicate State Program:

- _____ Licensure - A license is a special privilege granted
by the governing authority to do what
otherwise would be unlawful.
- _____ Permit - A permit is official leave to carry on
an activity or to perform an act which,
though not especially forbidden by law,
is not allowable without such authority.
- X Registration - Registration is merely a device for
record-keeping and for informational
purposes.
- _____ Approval - Approval is the act of confirming,
ratifying, sanctioning, or consenting
to some act or thing done by another.
- _____ Voluntary -

2. Total number of laboratories participating in the State
program: 134

3. How many hospital laboratories are known or estimated to be
operating in your State? 70

4. How many independent clinical laboratories are known or
estimated to be operating in your State? 6

5. How many laboratories are known to be operating in your
State which serve group practices, i.e., three or more
professionals for their own patients? 44

6. How frequently do you inspect or visit laboratories covered
by your evaluation or proficiency testing programs? very occasionally



- 20
7. Do any components of the State Health Department, other than the Laboratory, have responsibilities for the Laboratory Improvement Program?

Yes X No

If Yes, please list the organizational units involved in this program and give a brief statement of the responsibilities of each.

Hospital and Medical Facilities Division. Title XVIII and Title XIX of the Social Security Act as amended. Independent Laboratories and Laboratories in non-JCAH hospitals. However, medicare is going into JCAH hospitals on a selective basis.

8. How many local health departments exist in your State?

	<u>Health Departments</u>	<u>Number with Laboratories</u>
City	<u>0</u>	<u>0</u>
County	<u>53*</u>	<u>0</u>
City-County	<u>3</u>	<u>2</u>
Other	<u> </u>	<u> </u>

* Every county must have one by law but mostly they consist of a very part-time health officer, perhaps a nurse, and sometimes a sanitarian.



D. PROFICIENCY TESTING PROGRAMS UNDER MEDICARE

1. What proficiency testing programs are available in your State?

<u>x</u>	State-operated program
<u>x</u>	State-approved program

2. If State-approved programs are available by whom are they provided?

<u> </u>	College of American Pathologists
<u> </u>	American Association of Bioanalysts
<u> </u>	Other (List)
	<i>American Soc. Clinical Pathologists</i>

3. How many laboratories are participating in proficiency testing programs in your State? 69

4. Number of laboratories losing certification under Medicare during year reported:

<u>No. of Labs.</u>	<u>Reasons for Losing Certification</u>
0	

We don't decertify laboratories unless absolutely necessary. They are persuaded to request decertification voluntarily. One laboratory did this year because they were not able to continue to meet Medicare standards.



INTRASTATE EVALUATION OF LABORATORIES AND PROFICIENCY TESTING PROGRAMS

Discipline	Participation in Evaluations:					Type of Laboratory					No. of Labs participating in Proficiency Program by Type of Program				15 Indicate if: License (L) Permit (P) Register (R) Approval (A) Voluntary (V)
	1 No. of Labs Part- icipat- ing	2 No. of Direc- tors Licensed	3 No. of Technol. Licensed	4 Yearly No. of Eval. Shpmts. per Lab	5 No. of Spec. per Shpmt.	6 Independ- ent Clin- ical	7 Hospi- tal	8 Public Health	9 Commer- cial	10 <i>Clinic & M.D. Office Labs</i>	11 State	12 CAP	13 AAB	14 Other	
Clin. Chem.												34			
Hematology												C			
Immu- no- hematology												A			
Serology												P			
(Syphi is)	64			4	10	3	42	1	1	17	34				A
Bacteriology	69			2	5	3	57	1	2	0	7	59	B		V
Mycology												a			
Parasitology												s			
Serology (Non VD)												i.			
Virology												e			
PKU												S			
Water												u			
Milk												r			
Urinalysis												v			
Toxicology												e			

- 1 - includes 3 Indian Health Service hospitals
2 - includes 1 Indian Health Service clinic



Begin Special Reports Section

SPECIAL REPORT

VI. DATA PROCESSING ACTIVITIES

1. Reports of laboratory workload statistics are currently prepared:

- a. Entirely by use of longhand entries or typewriter. ☒
- b. By unit record (punch card) equipment. ☐
- c. By electronic data processing (computer). ☐

2. Computer available to Laboratory: ____ Yes X No

If Yes,

Computer is located: ____ On Premises ____ Off Premises

Computer is under direction of: ____ Lab. ____ Health Dept.

____ Other (Specify) _____

3. Computer specialists available (number):

Specialty	No. on Staff of:		
	Lab.	Health Dept.	Other
Systems Analysis			
Programming			



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4. The State Laboratory has or is considering the following applications on the computer:

(Indicate by Check Mark)

Application	Fiscal Year 1972	Fiscal Year 1973	Planned for Future
Licensure or Registration	_____	_____	_____
Diagnostic reporting	_____	_____	_____
Workload statistics	_____	_____	_____
Management information	_____	_____	_____
Purchasing	_____	_____	_____
Personnel records, including salaries	<i>These are already computerized in Department of Administration.</i>		
Radiological health calculations	_____	_____	_____
Supply inventory	_____	_____	_____
Blood bank	_____	_____	_____
Preventive maintenance	_____	_____	_____
Training	_____	_____	_____
Environmental health reporting	_____	_____	_____
Biologics production and distribution	_____	_____	_____
Clinical chemistry calculations	_____	_____	_____
Control of instruments	_____	_____	_____
Other (List) _____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Page 44 deals with Automated Laboratory Procedures; and we have none.



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VIII. LABORATORY FIELD ACTIVITIES

A variety of laboratory programs and contributions to the total public health effort are conducted by members of the laboratory staff but are outside and beyond the physical limits of the laboratory or its branches. The following entries are requested in the hopes of illuminating these programs.

Program	# of Field Investigations, Inspections or Consultations	# of Reports Issued	# of Man-days Spent in the Field Activity
Water Pollution Control *			
Air Pollution Control *			
Occupational Health * and Safety			
Laboratory Inspection *			
Hospital Facility Inspections * (other than laboratories)			
Consultations with			
a) Professional Societies	4	- -	12
b) Governmental Agencies			
1. Federal			
2. State			
3. County			
4. City or Local			
Court Appearances or other Legal Proceedings **	12		18

* These activities are not done by personnel in the Laboratory Division but by personnel in the Air Quality Bureau, Water Quality Bureau, and Licensing and Certification Bureau.

** Since July 1, 1972, there have been 7 court appearances for 9 man days. This is getting out of control.



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IX. MISCELLANEOUS INFORMATION

- A. List any grants, contract or special service agreements with other departments or agencies, private, federal, State, or local, to include programs served, services provided, estimated staff utilized, and costs, if available.

*Department of Transportation -
Highway Alcohol program.*

*Quality Control on Alco-Analyzers, processing of SM-7
Sobermeters, testimony in court.*

*F.Y. 1972 cost = \$76,835 (includes purchase of 15 complete
Alco-Analyzer set-ups, Sobermeters, Varian 2800 Gas
Chromatograph with accessories, etc.)*

Personnel = 1 Chemist II; 1 Laboratory and Field Technician II.

- B. Does your Laboratory publish a laboratory news letter?

Yes x No

- If Yes, what is the title and what is the frequency of publication?

LABORATORY BULLETIN - 12 issues per year

In what year was it started? 1968

To whom is it distributed? Registered Laboratories

in the State; State Laboratory Directors; and Associated

Interests. Initial mailing = 450 copies.



- C. Estimate the percent of the total Laboratory Expenditure expended in each of the following laboratory programs:

<u>Program</u>	<u>% of Total Expenditures</u>
1. Analytical Services	<u>99.0 %</u>
2. Research and Development	<u>0.5 %</u>
3. Production of Biologics	<u>- - %</u>
4. Intrastate Laboratory Improvement	<u>0.5 %</u>
5. Other	<u>%</u>
TOTAL	<u>100 %</u>

- D. Does your Laboratory have any screening programs in progress, other than PKU? Yes x No

If Yes, please list programs:

Are any new screening programs contemplated? NO

If Yes, please list:

*This is a problem —
do you have an answer?
Would a program to include
Galactosemia & Maple sugar urine
screen be justified in Montana?*



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- E. Do you use, as a management tool, a system that attempts to "weight" your workload?

Yes x No

If Yes and you have a written description of your weighting system, please enclose a copy. If you do not have a written description of your weighting system but feel you could describe it with a brief statement, please do so.

After a year's experience, I attempt to estimate the cost of each analytical procedure performed in the laboratory. Here is my latest calculation:

Cost of an SM-7 Alco-Analyzer test for ethyl alcohol content of breath.

1. 0.50 uniform specimen handling cost - includes postage, mailing containers, clerical service, overhead for office and amortization on office equipment.
2. 2.25 cost of SM-7 Sobermeter, without indicator tube (from Luckey).
3. 2.25 technical time including time for calculations and reporting. Our "shop cost" for technical time in the laboratory is \$6.00 per hour. This includes overhead, amortization on instruments, all personnel benefits including annual leave and sick leave, and a charge for expendable items.

\$5.00 Total cost of SM-7 Sobermeter procedure.



Begin Quadrennial Report
Section

QUADRENNIAL REPORT

X. ADDITIONAL PERSONNEL INFORMATION

A. PERSONNEL POLICIES:

1. Individual must be a resident of the State prior to employment?
____ Yes X No. If yes, state length of time period _____

2. An employee must be a resident of the State during employment?
____ Yes X No.
3. The normal workweek is 40 hours. Explain any special conditions governing work hours here: _____

4. Personnel required to work overtime are compensated by:
____ overtime pay x time off ____ both. This overtime pay: ____ applies to all levels of employees; applies only as high as the Micro III level.
5. The rate of overtime pay is None - time off.

B. EMPLOYEE BENEFITS:

1. Annual leave is earned at the rate of 1 1/4 days per month during the period 10 years, 1 1/2 days per month during the period 11-15 years, and 1 3/4 days per month by those with 16-12 years and more of service. State any exceptions here: Over 20 years - 2 days per month.

2. The maximum amount of annual leave that can be accumulated is: 30 days. State any exceptions here: However, a person can go up to 36 days during the year.



3. Sick leave is earned at the rate of 1 days per month during the period - - years and the rate of - - days per month afterward. State any exceptions here: Can't use it during first 90 days of employment.
4. The maximum amount of sick leave that can be accumulated is no limit. State any exceptions here: Terminated employees are paid a lump sum equivalent to 1/4 of the value of the accumulated sick leave.
5. Special leave provisions include: - Maternity Leave
x Military Leave x Court Leave - Educational Leave
- Administrative Leave x Leave Without Pay - Other (List)
-
6. The number of paid holidays is: 11 1/2 (1/2 = Election^{day} every other year)
7. Group hospitalization is available x Yes - No. The portion of the premium paid by the employee is abt. \$40/Mo and by the State is \$10./mo.. State any special provisions or requirements here: - - -
8. Group life insurance is available - Yes x No. The portion of the premium paid by the employee is - and by the State is -. The amount of insurance for which the employee is eligible is determined by: (A group accident policy is available.)
9. Employees are covered by Social Security x Yes - No. Employees are eligible for a State retirement plan x Yes - No. If yes, the employee pays at the rate of 5.75 % of salary and the State contributes at the rate of 4.6 % of salary.

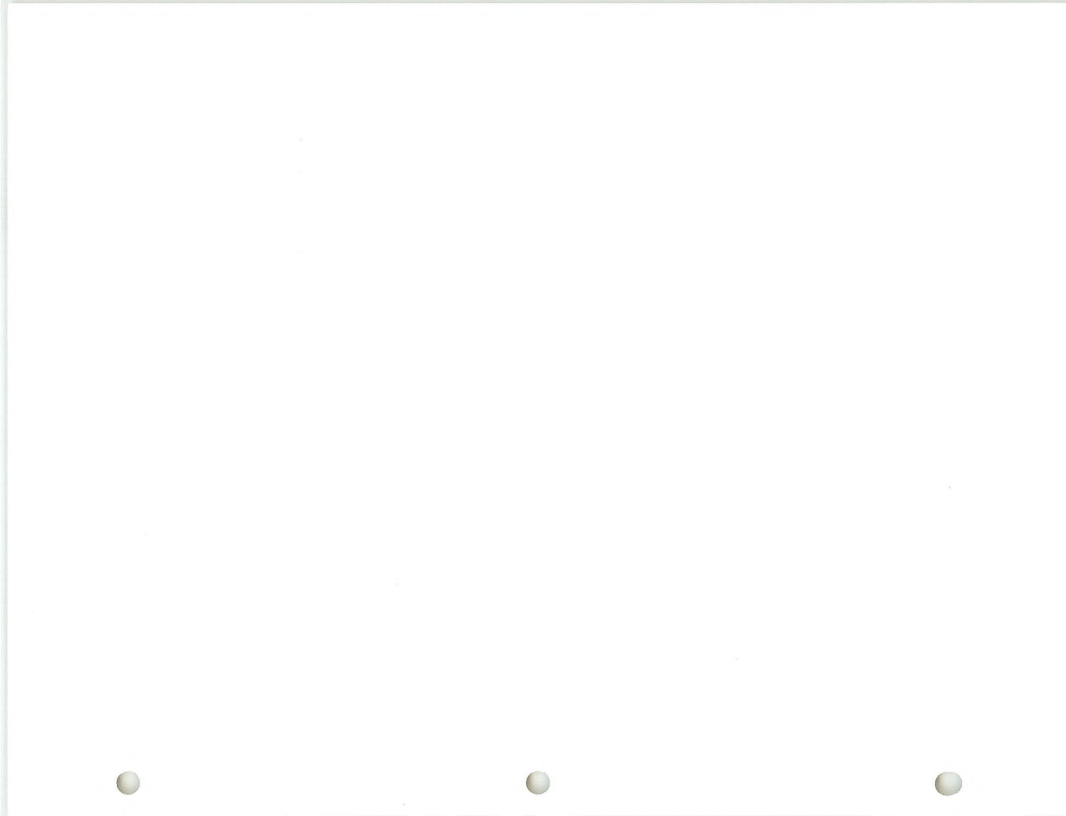
- 41
10. Describe here any other significant employee benefits such as
adequate free parking. Adequate free parking available; also
clean air and hunting, fishing, and skiing.
-
-
-



C. EDUCATIONAL LEVELS OF LABORATORY PERSONNEL:

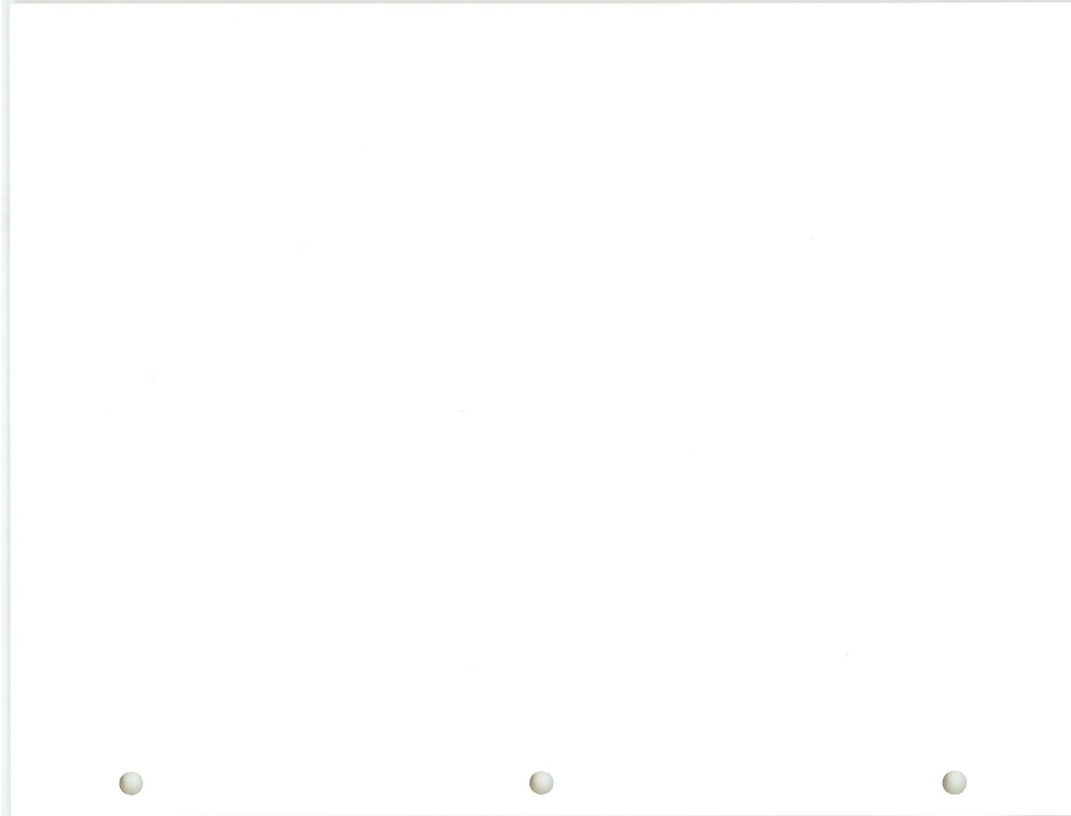
Indicate total number employed in each classification and break this number down under "Highest Degree." Other professional positions not listed in the "Position Title" column may be shown either in the blank spaces or on Page 55.

POSITION TITLE	CORRESPONDING STATE TITLE (If Different)	No. of Filled Posi- tions	HIGHEST DEGREE								
			MD (PATH.)	MD	Ph.D, Sc.D	DVM	DR. PH	MS-MA	MPH	BS-BA	None
Lab. Director	Administrator	2			x /						
Asst. Lab. Director											
	Chief, Chem. Lab. Bureau	2								x /	
	Chief, Micro. Lab. Bureau	0									
Microbiologist V											
Microbiologist IV											
Microbiologist III		2								x /	
Microbiologist II		4						x /		3	
Microbiologist I											
	Virologist I									x /	
Chemist V											
Chemist IV											
Chemist III											



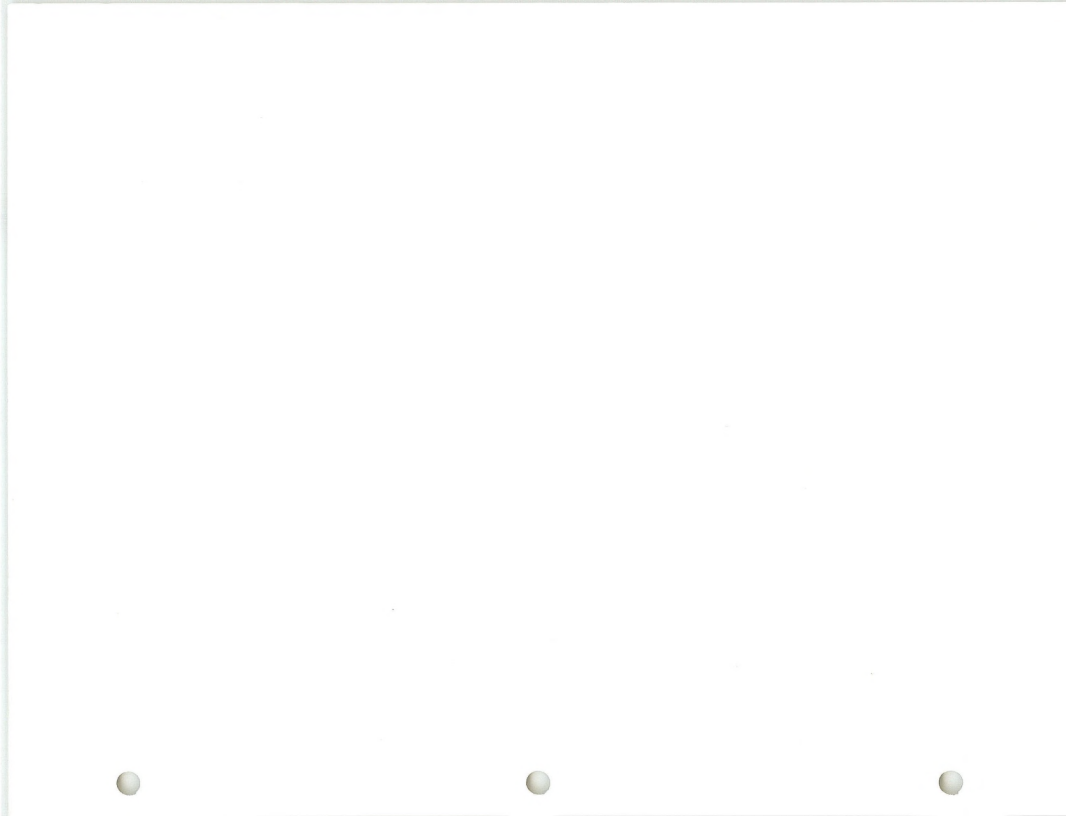
C. EDUCATIONAL LEVELS OF LABORATORY PERSONNEL (Cont'd):

POSITION TITLE	CORRESPONDING STATE TITLE (If Different)	No. of Filled Posi- tions	HIGHEST DEGREE								None
			MD (Path.)	MD	Ph.D, Sc.D	DVM	DR. PH	MS-MA	MPH	BS-BA	
Chemist II		2								x 2	
Chemist I		1								x /	
Lab. Technician II		2									x 2
Lab. Technician I		2									x 2
Lab. Aide II	Lab. Helper II	1									x 2
Lab. Aide I	Lab. Helper I	1									x 2



C. EDUCATIONAL LEVELS OF LABORATORY PERSONNEL (Cont'd):

OTHER PROFESSIONAL POSITIONS (List):	No. of Filled Posi- tions	HIGHEST DEGREE								
		MD (Path.)	MD	Ph.D, Sc.D	DVM	DR. PH	MS-MA	MPH	BS-BA	None
<i>Positions NOT paid from Laboratory Division Budget but working in the Laboratory:</i>										
<i>Microbiologist II</i>	<i>1</i>						<i>x /</i>			
<i>Chemist II</i>	<i>1</i>								<i>x /</i>	
<i>Medical Technologist I</i>	<i>1</i>								<i>x /</i>	
<i>Lab. Helper II</i>	<i>1</i>	<i>Part-time work study students assigned from Carroll College.</i>								
<i>Lab. Helper I</i>	<i>1</i>									

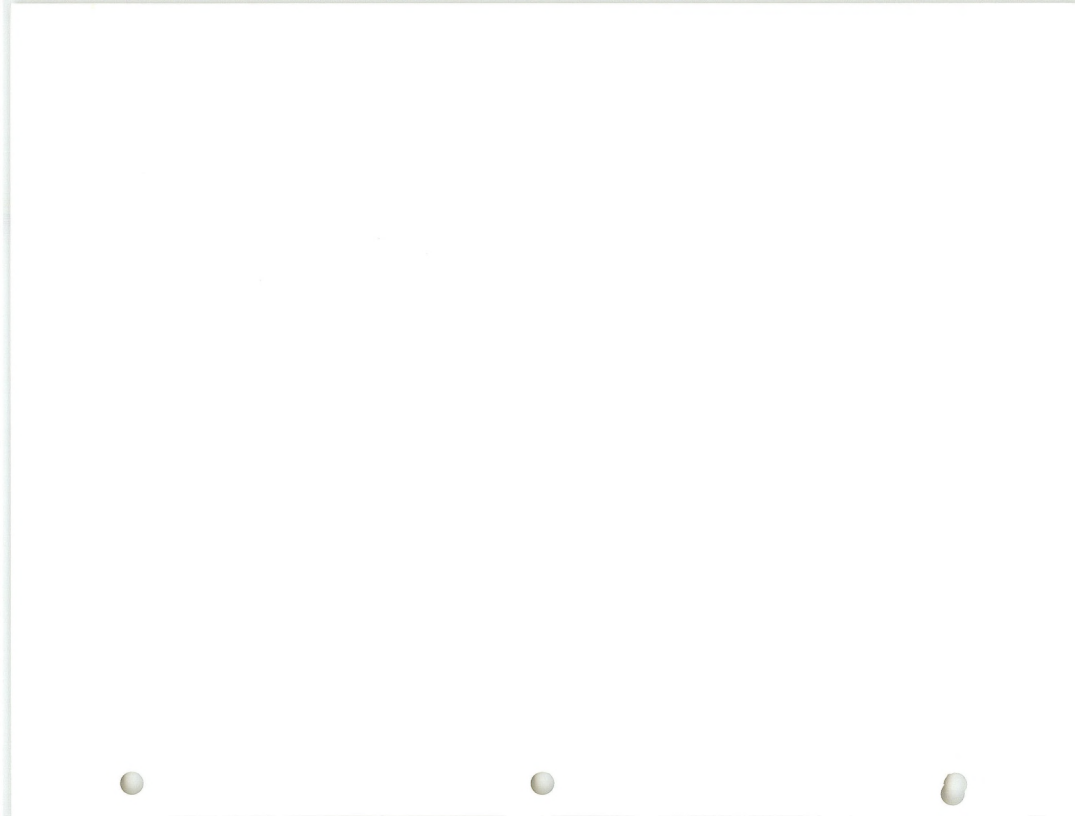


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D. TOTAL YEARS EXPERIENCE OF LABORATORY PERSONNEL:

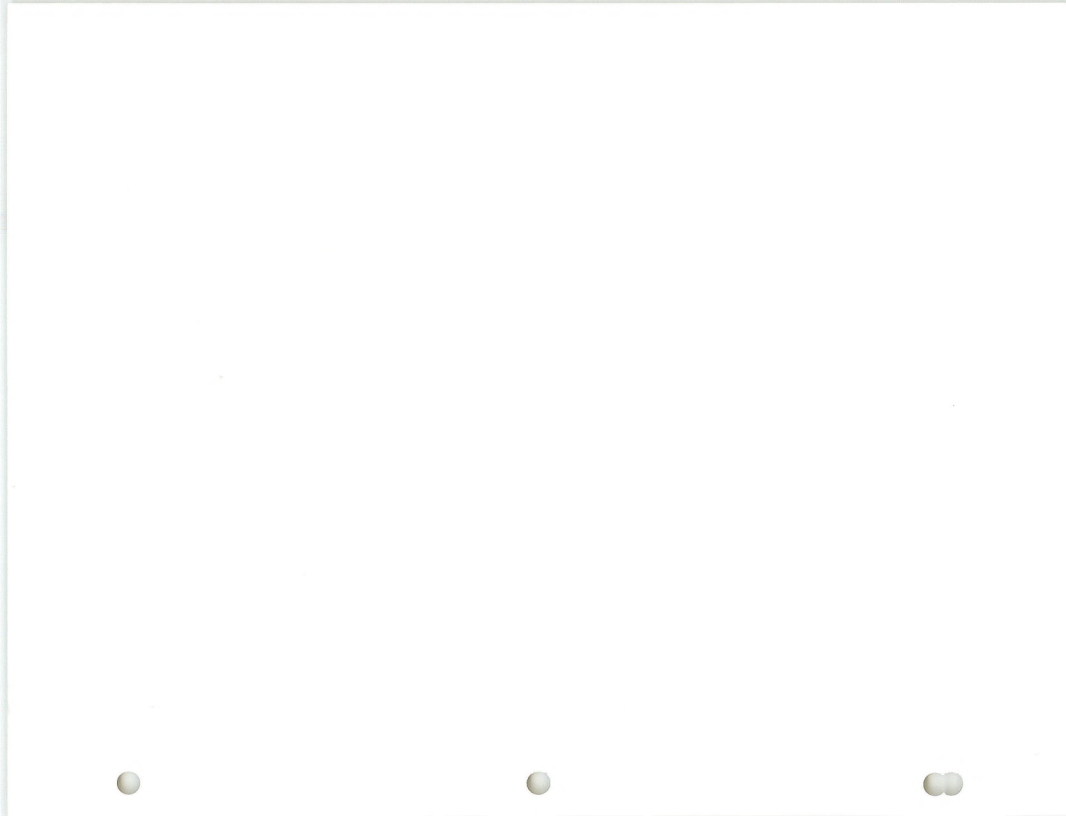
Indicate number employed in each category. The total number reported on each line should equal the corresponding "Number of Filled Positions" figure shown on Pages 53-55.

POSITION TITLE	CORRESPONDING STATE TITLE (If Different)	< 1 Yr.	1-4 Yrs.	5-9 Yrs.	10-14 Yrs.	15+ Yrs.
Lab. Director	<i>Administrator</i>					1
Asst. Lab. Director						
	<i>Chief, Chem. Lab. Bureau</i>					1
Microbiologist V						
Microbiologist IV						
Microbiologist III						1
Microbiologist II				1	1	2
Microbiologist I						
	<i>Virologist I</i>			1		
Chemist V						
Chemist IV						
Chemist III						



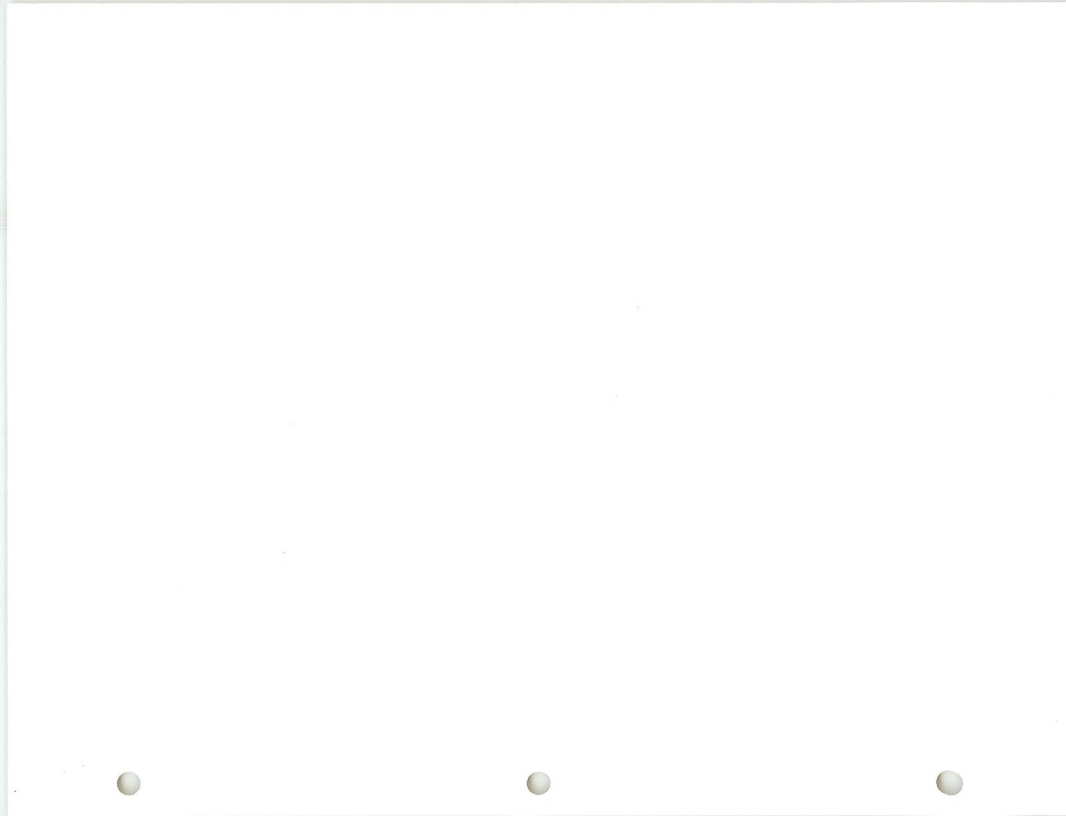
D. TOTAL YEARS EXPERIENCE OF LABORATORY PERSONNEL (Cont'd):

POSITION TITLE	CORRESPONDING STATE TITLE (If Different)	< 1 Yrs.	1-4 Yrs.	5-9 Yrs.	10-14 Yrs.	15+ Yrs.
Chemist II			2	2		
Chemist I		2				
Lab. Technician II				2		2
Lab. Technician I			2		2	
Lab. Aide II			2			
Lab. Aide I			2			



D. TOTAL YEARS EXPERIENCE OF LABORATORY PERSONNEL (Cont'd):

OTHER PROFESSIONAL POSITIONS (List):	< 1 Yrs.	1-4 Yrs.	5-9 Yrs.	10-14 Yrs.	15+ Yrs.
<i>Not on Laboratory Budget</i>					
<i>Microbiologist II</i>				2	
<i>Chemist II</i>			2		
<i>Medical Technologist I</i>		2			
<i>Lab. Helper II</i>		2			
<i>Lab. Helper I</i>	2				



4: 8

QUADRENNIAL REPORT

XI. ORGANIZATION AND SERVICES OF THE LABORATORY

1. Attach the most recent copies of organizational charts for:

- a. The Health Department b. The Division of Laboratories

Please indicate the number of people assigned to each organizational unit of the Laboratory, if this is not shown on the chart.

2. Have there been any changes in the reporting year affecting the internal relationships or the Laboratory with other units of government?

No; everything except employee leave time is on a fiscal basis.

3. What services are provided by the Laboratory to State departments other than the Health Department?

Highway Alcohol and Drug tests to Department of Intergovernmental Relations - Highway Safety Division.

4. What health-related laboratory services are provided by other departments of the State government?

Rabies laboratory work in Montana done by Department of Livestock - Animal Health Division.

Bacteriology of Milk and Frozen desserts in Department of Livestock Animal Health Division. They have an excellent laboratory of Montana State University in Bozeman.



5. What services are provided by the Laboratory to local health departments?

All services described in our annual narrative report which will follow.

6. What services are provided to local hospital and independent clinical laboratories by the Laboratory?

Same as above.



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7. Charges for Laboratory services:

A. Does the Laboratory charge for any of the services it performs?
x Yes _____ No. If Yes, list the services and charge per unit.

<u>Service Performed</u>	<u>Charge per Unit and Unit</u>
<u>Bacteriological analysis of drinking water.</u>	<u>\$2.00</u>
<u>Municipal water supplies - on contract MPN - water</u>	<u>10.00</u>
<u>Chemistry - drinking water</u>	<u>5.00</u>
<u>Complete Chemistry drinking water</u>	<u>10.00</u>
<u>Alcohol in blood or urine</u>	<u>5.00</u>

B. Estimate the total annual receipts if charges are made.

Water = \$28,876.24 Alcohol = \$4000.

What is the disposition of these funds? Water to
General Fund. Alcohol from Highway Patrol to Department.

8. Indicate by percentages the recipients of your Laboratory's services:

30 % State and local public health activities
20 % Reference service to other laboratories
30 % Private physicians
20 % Hospitals and clinics
 % _____
 % _____
 % _____



9. Has the Laboratory or its personnel been assigned a role in Civil Defense activities? If so, what? YES. One person is assigned to participate in the Annual CDC exercise.

What resources from Civil Defense have been provided? None

What training has been undertaken to fit the Laboratory for this role? None

10. Requirements for reporting laboratory results indicating communicable diseases:

Does your State have a law or Board of Health regulation requiring public health or clinical laboratories to report to the Health Department any laboratory results indicating communicable diseases? ☒ Yes ☐ No.

If there is a law or regulation, what year did it become effective? Regulation No. 40 Adopted March 9, 1920

Has the reporting program been fully implemented? ☒ Yes ☐ No. If No, what is the current status? _____

our morbidity reporting still leaves much to be desired.

When there is an influenza epidemic and physicians realize the need, reporting improves. Also there has been some improvement in reporting cases of gonorrhoea.

Regulation 40 is being revised and will include emergency sources of critical biologies.

Pages 63 and 64 deal with Branch Laboratories and we have none.



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XIII. LABORATORY SAFETY, EQUIPMENT MAINTENANCE, AND ANIMAL USAGE

A. Laboratory safety:

1. Do you have a laboratory safety program? ☒ Yes ☐ No.
2. Do you have an individual designated as a safety officer?

☐ Yes ☒ No.

If Yes, list name and title of this person:

For special security measures when indicated: JAMES DELANEY,

Laboratory Technician II

3. Do you have an organized safety committee? ☐ Yes ☒ No.
4. Do you have a written procedure manual to cover laboratory accidents? ☐ Yes ☒ No.

If Yes, please attach a copy with your report.

5. List the safety hoods now being used in your laboratory and their uses (i.e. Kewanee Safety Hood - Rabies work only.):

Safety Hood

Uses

Biological Safety Cabinet
Modified per CDC review

Tuberculosis work

Safety Hood in Virology Lab.

Inoculation of tissue cultures
and handling clinical specimens.
Also used for Carbon monoxide.

6. What type of a maintenance program do you have for these Hoods? Who provides this service?

Tuberculosis hood decontaminated, and filters changed by
laboratory personnel when indicated by decrease in air flow.



B. Maintenance and service facilities:

Does the Laboratory have an organized preventive maintenance program for laboratory equipment? No

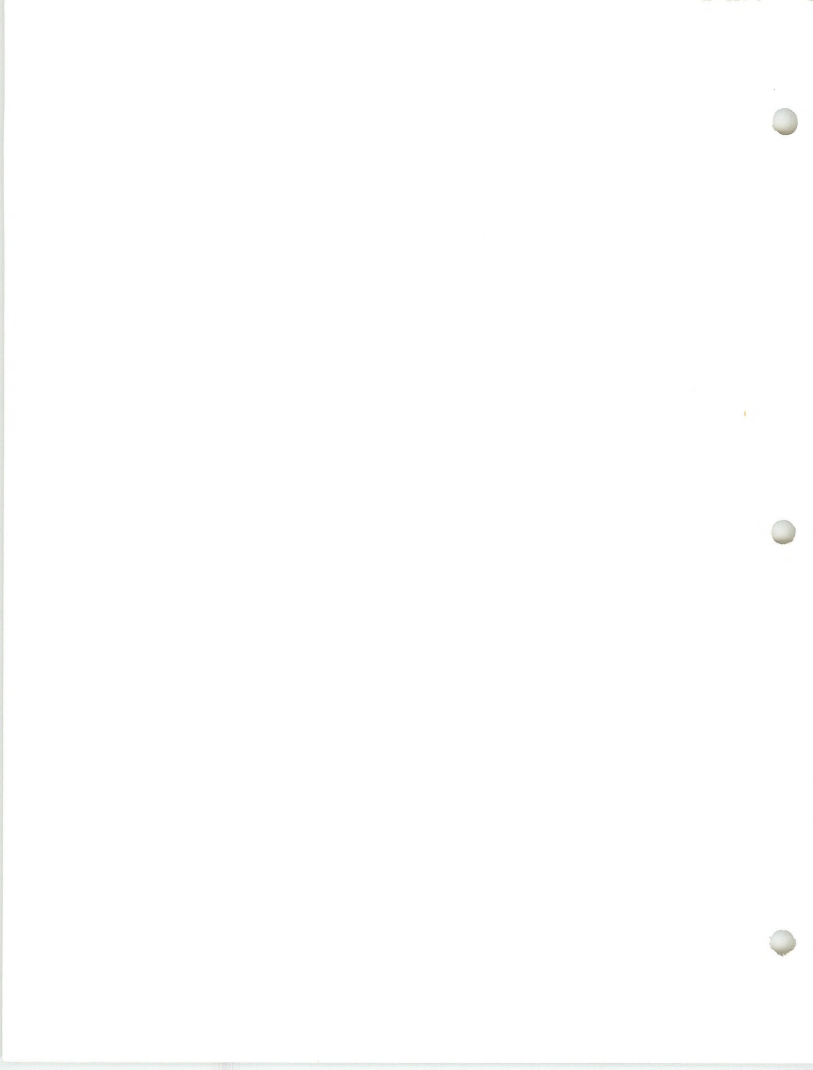
Is there an equipment maintenance man on the staff? No

If not, how is maintenance obtained? By guess and by gosh!

Janitorial services and
utilities maintenance +
engineering contracted by the
State to Creek Maintenance.

C. Animal usage per year:

KIND	NO. USED	NO. BRED	NO. PURCHASED	MAJOR USES
Mice	150	200	0	Virology unknowns from CDC.
				Toxicity Tests.
				Inoculation of specimens for viral isolation
Sheep	2	0	2	for bleeding
Rabbits	2	0	2	for bleeding
Guinea Pigs	2	0	2	for bleeding



COMMENTS PAGE

Please feel free to make comments on the importance of the areas in which we are collecting information as applies to your needs. Indicate any additional important areas of information.

All good and useful for comparisons.

What happened to financial data? I always found it interesting and useful.

Comment on any information you feel should not appear in the printed Consolidated Annual Report.

Other comments:

4. Narrative report will follow. This is the one written for professional consumption and ties together the following:

- 1. Annual Statistical Report to CDC*
- 2. State Plan*
- 3. Annual report to Governor Forrest H. Anderson.*

DHEW, HSM, CDC

